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High-Quality Used Servers & Other IT Products

ServerMonkey Six-Step Quality Program Ensures The Equipment You Order Meets Your Needs

SERVERMONKEY.COM knows that a good price is meaningless if the product isn't up to your standards. That's why the ServerMonkey quality program ensures all products meet the highest industry standards. The program was designed and implemented by certified quality professionals with deep expertise in IT products to assure that ServerMonkey provides only the best used servers.

ServerMonkey's Six-Step Quality Program

ServerMonkey's six-step process ensures you receive factory-new quality refurbished equipment that will meet all your specifications:

Step 1. ServerMonkey only sources from trusted vendors to ensure authentic and well-maintained equipment. The company finds the best used servers available so it can promise the highest quality in every product it offers.

ServerMonkey partners are checked through credit, finance, and security.

Step 2. ServerMonkey techs perform a visual inspection on all product received to assess the external condition and verify labeling. All inspectors are

trained and examine parts with careful attention to detail.

Part numbers, quantity, and condition are documented, along with internal components such as CPU, memory, and hard drives. ServerMonkey also verifies any service tags and COA tags.

Many ServerMonkey inspectors are A+ certified, and all have Counterfeit Electronic Components Avoidance training.

Step 3. All inventoried equipment goes through ServerMonkey's diagnostic evaluation, which includes a functional analysis, part replacement (if needed), and thorough cleaning. In this intensive step, inspectors work thoroughly with the equipment to make sure it's working to its maximum potential.

Inspectors use PC Doctor Service Center 7.5 to test individual components. Depending on the generation of the server, the latest diagnostic utility is either downloaded from the manufacturer website or booted from the system directly. Servers are tested as part of both inbound and outbound inspection.

Step 4. With your order in hand, ServerMonkey techs perform an equipment upgrade to tailor the product to meet your




specifications. ServerMonkey offers numerous options for customization so you can get exactly what you need.

Upgrade parts are pulled for each order. Technicians run SBU on chassis (BIOS update utility) and also update firmware on the RAID controller, NIC, and DRAC.

Step 5. All equipment undergoes full burn-in testing before shipment. This testing includes industry-standard tests to ensure high performance. This test-run step ensures your product will work exactly the way you need it to from the first time you use it. Initial diagnostic pretest is 10 to 15 minutes followed by a one-hour burn-in.

Step 6. Equipment is packaged by trained professionals.

ServerMonkey uses only the most secure handling, packing, and shipping methods so your order is handled with the highest quality from start to finish.

ServerMonkey uses CFC-free QD contact cleaner and touch up paint in the cleaning and refurbishment process. Boxes are made from recycled material, ESD bubble wrap is made from recycled product, and pad pack is 100% recycled paper. Plus, orders are packed using CFC-free foam polyurethane packing. 



Contact

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A Big-Picture View Of Both Power & Environmental Data

Server Technology Sentry Power Manager 5.3 Provides A Central Spot For The Information You Need

DATA CENTER infrastructure management tools are great for providing a holistic view of a data center. But not every enterprise needs a DCIM tool.

As Calvin Nicholson, senior director of software and firmware development at Server Technology, says: "What happens if you're just concerned about your power and environmental monitoring, which a lot of people are, and don't really need a full DCIM solution?"

In those cases, a tool such as Server Technology Sentry Power Manager is just what they need, Nicholson says.

Making Data Usable

Server Technology SPM is a DCIM-type tool for monitoring and reporting on the information gathered by the PDUs installed in your data center. Unlike with some other tools or manual processes available, SPM sits above the PDUs, Nicholson says, auto-discovers them, and brings all the data into one location. "SPM takes the power information and makes it usable," he says.

Version 5.3 is the result of Server Technology's engineers working to update and improve the product, Nicholson says.

Environmental, Too

One of the greatest improvements with version 5.3 is the ability to integrate and report on data gathered by environmental sensors from RF Code. Although customers can get sensors for temperature, humidity, and water from Server Technology and monitor to ASHRAE standards, RF Code offers additional sensors, such as those for pressure and airflow.

"These sensors are fairly inexpensive," he says, "and RF Code sensors can now export information into SPM so data center managers can get all the power- and environmental-related information in one location." With the integration of RF Code and Sentry Power Manager, companies can monitor a large and diverse set of power and environmental information, he says.

A Complete View Of Power

The latest version includes a number of other updates, including support for PDUs offered by more competitors. Version 5.3

also adds the ability to create custom device templates, which essentially let you communicate with, track, and report on any SNMP-enabled device such as a UPS or RPP. Using these templates, you can take a number of PDUs and group them by cabinet to create a zone. SPM tracks the power capacity and trending information for both the zone and SNMP-enabled device.

"It's a pretty powerful tool," Nicholson says. "We're monitoring at the cabinet and now we can compare that against upstream infrastructure."

With the new integration of RF Code environmental sensors and the ability to track and monitor power information from

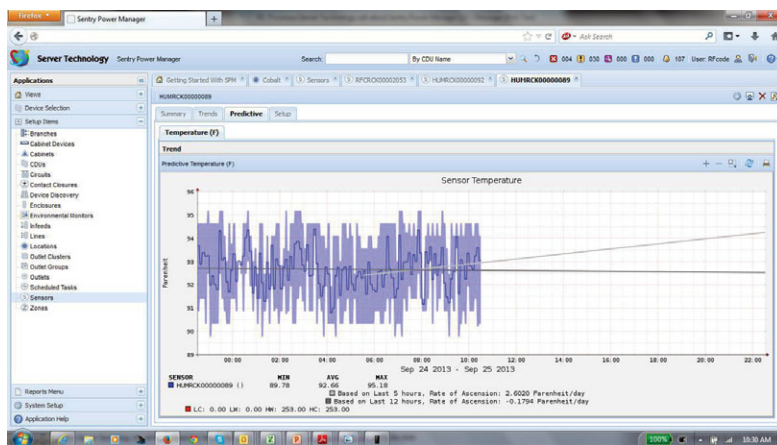
any SNMP-enabled device, Nicholson says any data center that has 25 or more PDUs really needs Sentry Power Manager.

"Not only can we do capacity planning and run reports, we can also help with firmware upgrades and configuration of units," he says. "If you're worrying about capacity, planning for an upgrade, or just need an understanding of how your infrastructure is growing, SPM can give you an idea of what's happening." **P**



Contact

(800) 835-1515
www.servertech.com



Sentry Power Manager offers predictive temperature trending.

Manage Remote Access With Just A Few Clicks

NCP Engineering Secure Enterprise Management Improves User & Administrator Productivity

LET'S FACE IT. Although remote access has become essential for enterprises, managing that remote access, configuring users, and securing connections can be a real nightmare.

Remote access tools are getting better, though, as NCP Engineering's Secure Enterprise Management solution proves. The software streamlines the task of managing remote access to just a few clicks. Once SEM is installed, administrators can take care of IT projects that are more important than manually configuring VPN users.

Single Point For Management

SEM 3.0 provides a single place for you to manage a company's entire network, both IPsec and SSL VPN, with full network access control management.

The program can be easily integrated into any existing VPN infrastructure. It's ideal for virtual machines and is simple to set up in distant locations with virtually no delivery time. Fully automated remote access operation means you can easily manage large numbers of remote users, and the ability to quickly configure remote access capabilities ensures you can prevent bandwidth hogging and wireless data consumption fees.

The 100% software-based solution is compatible with all major network-layer security technologies, including VPN gateways and firewalls, giving

you more flexibility and scalability. It supports a range of end device platforms, including most versions of Windows, Android, iOS, OS X, BlackBerry, Symbian, and Linux.

Lower Total Cost Of Ownership

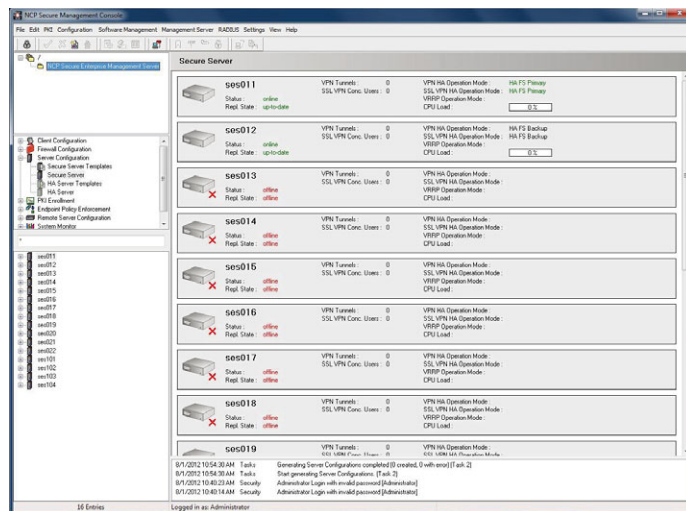
Being able to manage all of your enterprise's remote access needs from a central location means fewer clicks, less documentation, less training, fewer help desk calls, and fewer chances for error, adding up to a lower overall total cost of ownership.

SEM 3.0 includes an integrated RADIUS server, offering a central point for storing and managing client link profiles and issuing and managing certificates.

With a single management point, you'll also benefit from less effort needed for mass roll-outs and operation. Updates or configuration changes are quick and easy, with less chance of error or an incorrect configuration or operation.

An automatic update process lets you provision software updates centrally for all remote systems. These updates are then installed automatically the next time the user connects to the VPN.

If there's an error or problem during the update, the user's system isn't impacted and the previous configuration and software version are unaffected. All data and




updates are encrypted in the VPN tunnel, ensuring high security. If needed, devices can be updated without a VPN connection, provided the device is within the corporate network.

Strong Security

With all the effort put into simplifying remote access, NCP engineering didn't overlook security, which is easily one of the most important issues of all when it comes to allowing remote employees to access the corporate network.

SEM 3.0 comes with NCP Advanced Authentication, an integrated two-factor authentication system with a one-time password users receive via SMS. NCP Advanced Authentication eliminates the need for third-party solutions and makes two-factor authentication possible with only a mobile or smartphone.

Remote users simply connect to the network, receive an SMS text message with the password, enter the OTP, and then can access the network as if they were in the office. Each password is created by a random number generator and automatically canceled after use. 

NCP Secure Enterprise Management

- Two-factor authentication, with a one-time password delivered via SMS
- Single point of administration for a company's entire network, including IPsec and SSL VPN
- Integrated RADIUS server and certificate management

NCP

SECURE COMMUNICATIONS

(650) 316-6273
www.ncp-e.com

Easy Labeling On The Go

Brady BMP®41 Portable Printer Offers Both Die-Cut & Continuous Labels For Use In A Variety Of Datacomm & Electrical Applications

ANYONE WHO HAS SPENT time labeling cables, patch panel strips, faceplates, or other equipment knows what a hassle it can be. You print the labels, cut them, and make sure they stay in sequence only to get to a job site and find out you've forgotten or lost a label or smeared the printed text.

It's those types of headaches that the Brady BMP®41 portable label printer helps avoid.

The printer is unique in its ability to print both continuous and die-cut labels, says Matt Luger, Brady's regional product specialist for printers.

The BMP41's ability to print die-cut labels that are pre-cut and pre-spaced inside a cartridge eliminates the time- and money-wasting issues associated with continuous printers while still offering continuous labels for certain applications.

The printer can handle any labeling need, including flags, wraps, strips, and small labels for both indoor and outdoor use. And it is easy to



use—it automatically recognizes the label installed and defaults to the correct rotation, format, size, and font, with the ability to override any default settings.

Rubber guarding, bumpers, and a grab-and-go grip ensure the BMP41 can handle field and mobile use, including drops and bounces. An optional magnet easily attaches to the BMP41, so users can affix the printer to a metal cabinet or panel.

Brady offers the BMP41 without the expensive investment typical of other die-cut printers. It costs just \$299, including the printer, long-life NiMH battery, charger/AC adapter, one label cartridge, and a USB cable.

"Never before has there been a printer at a sub-\$300 price point that allowed users to get this full, robust set of labeling capabilities and labeling muscle," Luger says. **P**

Brady BMP®41

- Can print on either continuous or die-cut labels, eliminating waste
- Long-life NiMH battery
- Automatic label setup



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Pegasus Computer Marketing Specializes In Point Of Sale, Barcode, Mobile Computers & Kronos TimeClocks

DO ONE THING, and do it well. It's an age-old adage that holds true for Pegasus Computer Marketing, which has been in business since 1987.

Although the products and services the company offers have changed through the years, driven by the shift away from mainframe hardware and peripherals, its focus remains on being a total used hardware provider for sales, repair, parts, and complete systems.

Since the late 1990s, Pegasus has been selling and repairing point of sale terminals and peripherals, barcode equipment,

mobile and mounted computers, networking peripherals, and Kronos TimeClocks. It can service nearly any make or model and offers new and used parts and complete systems.

Pegasus performs all depot maintenance, flat-rate repair, sales, and buyouts from its 7,500-square-foot facility in Forney, Texas.

Having a central location allows the company to provide the best in technical and sales staff expertise and stay current on trends and the prices and availability of equipment its customers use.

All hardware sold or repaired by Pegasus is tested, refurbished, and foam-packed for shipment by staff right at its facility, ensuring total quality control and the ability to quickly turn around emergency requests from customers.

The company has stood the test of time and, in fact, still performs repairs and maintenance for some of the same retailers that have been trusting the company since day one, along with countless other companies that need a quality, reliable repair center. **P**



Pegasus Computer Marketing

- In business since 1987
- Offers repair, sales, and maintenance services all from its Texas location

(800) 856-2111
www.pegasuscomputer.net

Keep The Network Running

Portwell BPC-54120 Is Based On The Intel 10Gb Ethernet Controller & Features A New 100% Software-Controlled Bypass Interface

LET'S SAY your enterprise relies on backbone servers for unified threat management, firewall, load balancing, or WAN acceleration where high availability is critical. You can't afford to have a system failure or power loss impact your network.

Sound familiar? If so, a network adapter with failover/bypass capabilities is essential.

The Portwell BPC-54120 bypass module uses the Intel 82599ES 10G Ethernet controller with Direct Cache Access. It provides high-speed connectivity from board to board without any exposed cable.

Portwell's Gen 3 bypass design is 100% software-controlled. It features a simple command-based protocol that communicates between the hardware and driver.


An external hardware jumper lets you enable or disable the bypass function. Under Normal mode, data flows from the network to the CPU. In the event one of your inline appliances fails because of a software crash, power outage, or other issue, Bypass mode allows data to flow into one port and flows to the next available network device.

The BPC-54120's Watchdog Timer checks for network

issues as often as every second. If a host system does not refresh, the Watchdog Timer executes a preset command such as setting the relays to bypass or open mode.

The dual-port one pair segment Portwell BPC-54120 has a PCI-E 2.0 interface and includes support for IEEE1588, 802.1AS, and JumboFrame. Virtualization support comes in the form of Virtual Machine Device Queues and PCI-SIG SR-IOV.

Add in the BPC-54120's durable hardware design, and you have an adapter that offers

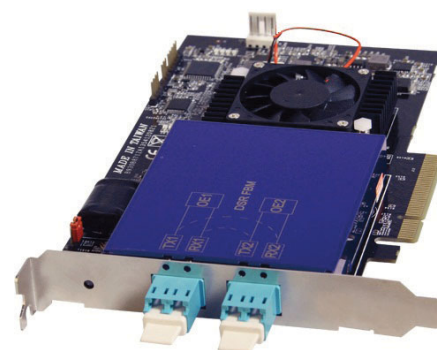
more reliable network traffic, higher throughput performance, and longer product life than any other product on the market. 

Portwell BPC-54120

- Intel 82599ES 10G Ethernet controller
- Gen 3 bypass design
- PCI-E 2.0 interface



(510) 403-3399
www.portwell.com



Climate Monitoring In A Compact Package

ITWatchDogs WatchDog 100 Monitors Temperature, Humidity & Dew Point, With No Software Required

IN WHAT CAN BE a crowded, confusing market for products designed to monitor the environmental conditions of your data center, the WatchDog 100 from ITWatchDogs is a compact, affordable competitor.

At just 1U by 8-1/2 inches, the WatchDog 100 is perfect for tight installations. The rackmount brackets (as pictured) offer flexible wire management options but can be removed or repositioned as needed to simplify installation.

The self-contained \$279 WatchDog 100 has a one-year warranty and comes with




temperature and humidity/dew point sensors onboard.

There are four analog inputs for dry contact or 0-5 VDC sensors and a digital sensor port allowing you to connect an additional four sensors using a 5-port splitter. Optional sensors include monitors for conditions such as airflow, water and smoke detection, door position, and power failure.

All you need is a Web browser to be able to view real-time sen-

sor readings, complete with graphs for trending and capacity management. The device offers three access account levels with flexible rights and security settings.

Using the Web interface, you can establish alert parameters. If the temperature or humidity fall outside of those thresholds, you can receive alerts via email, email-to-SMS, voice,

and relay. A relay output can trigger external devices such as an auto-dialer in case of alarm. Escalating alerts ensure additional personnel are notified as needed. 

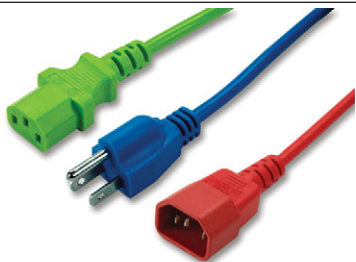
ITWatchDogs WatchDog 100

- Temperature and humidity/dew point sensors onboard
- Can add eight external sensors
- Secure Web interface



(512) 257-1462
www.itwatchdogs.com

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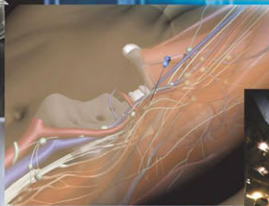
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SYS-5038ML-H24TRF



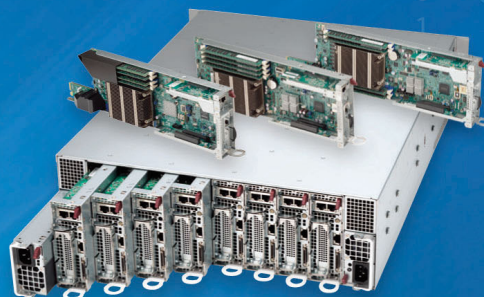
Intel[®] Xeon[®] processor
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12 Hot-pluggable Nodes in 3U

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SYS-5037MC-H12TRF

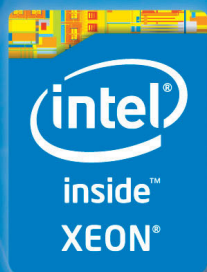


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(Rear I/O)

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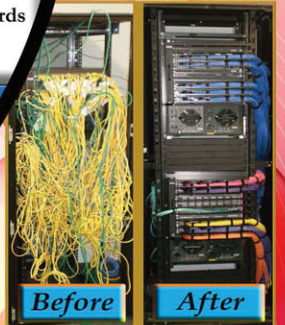
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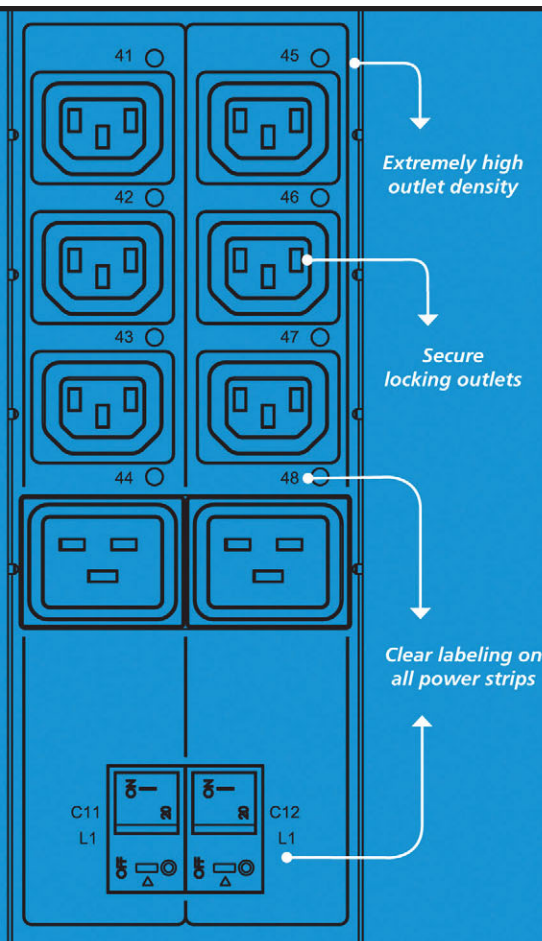
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- Link to Expansion PDU
- Temperature and Humidity Monitoring
- Network Power Monitoring
- Locking Outlets
- Branch Circuit Protection
- Button Mounting

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Automatic Transfer Switch—ATS



Provide Redundancy To Single-Corded Devices With The Ability To Switch Out-Of-Phase Sources In 8 To 15ms.

Providing redundancy on the power-circuit level is critical to maintaining uptime. The ATS Series provides a simple and reliable solution for automatically sensing power loss and seamlessly switching to a backup circuit. BayTech ATS transfer switch line offers a unique approach to performing the transfer by completely severing the connection between the source and load then waiting for the zero-crossing to perform the transfer. This is the driving force behind being able to perform out-of-phase transfers with a low-cost solution.

Standard Features

- Out-Of-Phase Source Switching
- 8-15ms Switching Time
- Programmable Dropout Voltage
- Programmable Switchback Voltage
- SNMP And HTTP With DS-Series
- PCB-Based Reliability
- Reports Volts, Current, Watts, VA
- Break-Before-Make Transfer

Monitoring Power on the ATS is a unique feature which provides information about:

- Amperage Load
- (Watts) True RMS Power
- Volt-amps
- Voltage
- Internal Temperature

By combining the ATS and the DS-Series, console server alerts on power and transfers can be sent via secure SNMP V3.

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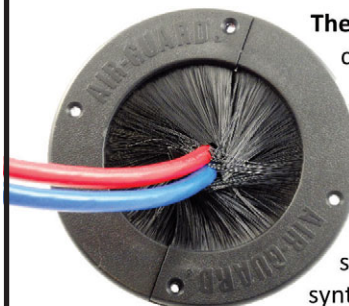
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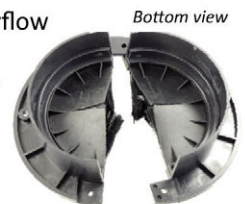
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An Easy, Affordable Way To Monitor & Manage Power

Server Technology Sentry Power Manager Provides The

POWER IS STILL KING when it comes to the top concerns data center managers have as they work to keep their data centers, the equipment inside them, and their enterprises as a whole up and running.

Calvin Nicholson, senior director of software and firmware at Server Technology, says there are other concerns, including increased cabinet densities, demand for more computing power, and the need to locate standard capacity. But many of those concerns all center around being more efficient in the way a data center uses power.

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With SPM's SNAP feature, you put in an IP range and SPM discovers the installed CDU's—regardless of manufacturer or whether it's just a few or thousands—and brings the information back into the SPM interface. You can configure cabinets and locations and get a global view of your data center floor and CDU's or quickly drill down to an individual cabinet or CDU. You can group and cluster outlets together across IP addresses, rows of cabinets, or the whole data center.

Use Power More Efficiently

Server Technology's Sentry Power Manager (SPM) helps ensure you're using power in the most efficient way possible. SPM's capacity planning and predictive features help you spot stranded capacity and help you know if and when you might run out of power.

"If you're not monitoring power, how do you know how much you're using compared

to availability," he says. "If you have available capacity, you can put off a decision that could cost you thousands of dollars for color space or up to millions of dollars for a new data center build."

Sentry Power Manager provides a way to measure, monitor, and trend data center power information in one central location. The product comes in both a standalone appliance and virtual version.

Make Information Decisions

Using the dashboard, you can configure your own NOK view, alerts, and alarms to see on the main screen. Different power back capabilities and NOK views can be configured to suit your needs. You can also set up power alerts and alarms to be triggered by power events.

Use Power More Efficiently

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"If you're not monitoring power, how do you know how much you're using compared

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Portables Outselling Desktop PCs In Every Market

As PC shipments continue to decline worldwide, the latest figures from research firm IDC show that even emerging markets, where PC sales had been strong, are turning away from full-sized computers in favor of mobile devices. IDC expects global PC shipments to decline 9.7% this year. The following chart illustrates the popularity of portable computers in both emerging and mature markets.

Market Shipments (In Millions)

Category	2012	2013	2017
Desktop PCs			
Emerging	94.8	85.1	80.9
Mature	53.4	49.3	42.2
Portable PCs			
Emerging	110.4	99.9	117.6
Mature	90.6	81.1	79.1
Total PCs			
Emerging	205.2	185	198.5
Mature	144	130.4	121.2

Federal Agencies Prepare For "Big Five" Technologies

A new report from MeriTalk, "The Net Of Federal Networks: Will You Survive The Big Five?," identifies the most popular IT deployments as data center consolidation, mobility, security, big data, and cloud computing. According to the report, most federal agencies are planning deployments in these five areas within the next two years, and network managers generally agree that their network loads will increase by 79% as a result, with 59% anticipating that such deployments will exceed the capacities of their networks. Additional findings include these assertions from network managers:



say Big Five deployments made today would put their networks at risk for bottlenecks



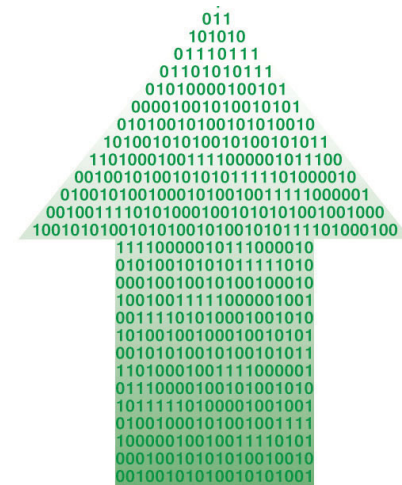
say their agency's network is currently prepared for Big Five deployments



fear security risks as a result of Big Five deployments



expect network latency issues following Big Five deployments



Company Leaders

See Opportunity, Value Of Big Data

There is some real substance behind the hype of big data, says Lisa Kart, research director at Gartner. A recent Gartner survey shows that 64% of organizations are either investing or planning to invest in big data technology this year. About 30% of companies have already invested in big data technology, 19% plan to invest within the next year, and 15% plan an investment in the next two years. "Our survey underlines the fact that organizations across industries and geographies see 'opportunity' and real business value rather than the 'smoke and mirrors' with which hypes usually come," Kart says. Big data investments typically go through several stages: knowledge gathering, strategy setting, proof of concept, then deployment. "For big data, 2013 is the year of experimentation and early deployment," says Frank Buytendijk, research vice president at Gartner. Less than 8% of organizations have deployed big data solutions.

Reduced Demand For Disk Storage Creates Competitive Environment

Enterprises in the United States, Western Europe, Canada, and other mature markets are spending less on external disk storage systems, creating a more competitive environment among manufacturers and lower pricing, according to IDC. The research group's Worldwide

Quarterly Disk Storage Systems Tracker report shows year-over-year revenues in the external disk storage market declined 0.8% during the second quarter. Revenues in the total disk storage systems market (internal and external) were down 5% year over year, but capacity shipped was up 21.5% during the same time frame.

■ Enterprise Cloud Usage Increases, But Roadblocks Remain

Over the past few years, cloud computing has progressed from hype to reality in many enterprise settings. Case in point: a new cloud computing study from 451



Research found that 60% of IT professionals and decision-makers surveyed envision cloud computing “as a natural evolution of IT service delivery,” and of the 40% who have separate cloud computing budgets, 69% anticipate budget increases this year and in 2014. However, 83% of respondents report significant roadblocks to deploying their cloud computing initiatives, which represents a 9% increase over survey results from late 2012. Peter ffoulkes, research director for cloud computing with 451 Research, says that these roadblocks are primarily “not technology related and fall within the domain of people, process, policy, and organizational issues, which are more complex for vendors to address.”

■ IDC Anticipates New Chapter In Cloud IT Services Adoption

Not only is the public IT cloud services market rapidly growing—reaching \$47.4 billion this year and passing the \$107 billion mark in 2017, with a compound annual growth rate of 23.5%—it has entered a “Chapter Two” growth phase, according to IDC, in which cloud computing will become increasingly interconnected with mobile, social, and big data components. “The first wave of cloud services adoption was focused on improving the efficiency of the IT department,” says Frank Gens, senior vice president and chief analyst at IDC. “Over the next several years, the primary driver for cloud adoption will shift from economics to innovation as leading-edge companies invest in cloud services as the foundation for new competitive offerings.”

■ Mobile Phone Market Growth Increases Again

After a lackluster 2012, with just 1.2% growth for the year, the worldwide market for mobile phones is likely to grow 7.3% year-over-year this year, according to the latest forecast from IDC. The research firm notes stronger-than-expected growth during the first half of this year, prompting it to increase its original 5.3% growth forecast. Kevin Restivo, senior research analyst with IDC’s Worldwide Mobile Phone Tracker program, points to smartphone shipments as driving overall mobile phone shipments across all markets. And, he adds, “Smartphones will represent virtually all of the mobile phone market in many of the world’s most developed economies by the end of 2017.” As for smartphone shipments this year, IDC expects them to grow 40% relative to 2012.

■ Social Media Benefits Small & Midsized Businesses

Small and midsized businesses with an active social media presence benefit from increased consumer engagement. That’s one of the results of a study, conducted

by Market Probe International on behalf of Twitter, based on observations of how consumers interacted via Twitter with SMBs based in the United States and the UK. The study found that 63% of users that decided to follow SMB Twitter feeds did so to support the SMBs, 73% to receive future product updates, and 61% to interact with the SMB. In addition, 85% of respondents say they felt more connected with the business after following it, 70% retweeted business posts because they liked the content, 64% mentioned a business to share a positive experience, and 54% replied to a business via Twitter to share a positive experience.

■ New Wireless Standard Opens Door For More Sales, Upgrades

Now that enterprise-class access points supporting the new 802.11ac wireless networking standard are on the market, there is an opportunity for increased WLAN

equipment sales and business network upgrades in the coming years. This year, however, has been (and will continue to be) mostly about transitioning to the prior WLAN standard, 802.11n, according to Infonetics Research. According to the firm’s “Wireless LAN Equipment



And Wi-Fi Phones” report for the second quarter, 90% of access points sold during the quarter were 802.11n-based. “Global wireless LAN equipment revenue grew 14% year-over-year in the second quarter of 2013 vs. growing almost 30% year-over-year in the second quarter of 2012,” says Matthias Machowinski, directing analyst for enterprise networks and video with Infonetics. “Still, WLAN remains the fastest growing network equipment segment.”

Have A Plan For Tablets In Your Enterprise

Build A Business Case, Then Know How You'll Handle Security, Network Traffic & BYOD

THERE ARE MANY things to consider when procuring tablets for enterprise deployment. Beyond network, data security, application, cost, support, and platform issues to mull, IT must consider if there's even a strong business case to make for tablets in terms of whether employees will benefit from having them.

"Enterprises shouldn't just get tablets to get tablets; they should be adopting them for specific employees who will benefit from them," says Christian Kane, Forrester Research analyst.

Have A Strategy & Stick To It

Andrew Borg, research director for mobility and collaboration at Aberdeen Group,

says every enterprise needs a well-established, enforceable mobile-device policy, whether or not the business plans to deploy tablets or whether or not the business will allow employees to purchase and bring their own devices to work.

"Having a strong enforcement policy prohibiting BYOD on tablets is one way to keep the Barbarians at the gate, if you will." Without such a policy, he says, "trust me, there will be employee-owned tablets trying to access corporate-owned email right now."

For example, he says, even if employees bringing tablets to work don't intend to use them for work purposes, every tablet entering the enterprise is



"pinging for a Wi-Fi connection without the user requesting that capability. The default is 'connect to available Wi-Fi,'" he says. "I'm not saying they will be successful, but I am saying whether IT wants it or not, there are already devices trying to access the network."

understanding the behaviors and the needs of both sides is the best way to do this."

Borg says acquiring end-user input is important. Ultimately, he says, usability and end-user experience define a program's success.

Acquiring end-user input on tablets and smartphones presents different challenges than input on laptops for small IT departments, however, as obtaining input for laptops really isn't necessary because laptops are essentially movable desktop systems that have become highly standardized over time where OS, platform, and core business productivity applications are concerned. Unlike with tablets, "it isn't about personalization, what apps you've loaded, how cool or sexy it is to carry around, or really about battery life," he says.

In terms of mobile usage, he says, tablets are "much more like a smartphone than a laptop." As a result, usability, app usage, battery life, and

Don't Sweat The Specs

"It's not about specs anymore," says Michael Battista, Ph.D., consulting analyst at Info-Tech Research Group. "Any two tablets can have exactly the same specs but widely different user experiences and capabilities."

Instead of getting held up on specs, companies should instead look at operating systems and form factors (or screen size). It's also important to determine if applications are available to accomplish desired tasks, says Christian Kane, analyst at Forrester Research. "If you have an idea of who will use them and what they will use them for, you'll know if there are available applications," he says. "In general, native apps are still developing, but there are plenty of them already out, and Web apps are something that allow you to care less about the platform on the device, which is nice."

Seek Employee Input

Obtaining employee input is imperative when weighing tablet choices. The best approach, Kane says, is asking employees about their preferences, how they work, and which tools they need to do their jobs.

"The goal is to improve productivity and efficiency and help people get their jobs done," he says. He adds that employees generally want to provide input concerning issues they're experiencing and how to improve them. "Ultimately, one side shouldn't dictate everything; it really should be a decision that's made with influence from both parties, and

end-user experience are more important and play a bigger role in a deployment's success.

Consider The Security Risks

As with any device, there are security risks specifically associated with tablets, says Michael Battista, Ph.D., consulting analyst at Info-Tech Research Group. "Tablets are small, so they tend to be brought everywhere and often left lying around," he says. "If the device didn't have a pass-code to unlock it, that could mean super-secret company data gets out there for anybody to take a peek at."

Battista adds that tablets are also seen as being less manageable than traditional computers because they are based on operating systems that "weren't designed with businesses in mind." This leads to many IT departments not having the expertise or experience to tightly control tablets.

As for the security risks, companies simply need to make sure employees are always aware of their tablets and understand that they can be a key for any thief to unlock sensitive company information.

Battista recommends companies make it policy to put pass-codes on tablets and also make it so tablets can be remotely wiped if lost or stolen. He adds that to help improve manageability, companies can invest

in mobile device management suites that, "through a combination of back-end infrastructure and on-tablet agents, can bring tablets to a manageability level approaching what companies have gotten used to with Windows-based PCs."

Can Your Network Handle The Traffic?

Whether your company decides to issue tablets to the workforce or you support a BYOD policy, the increased traffic could have a dramatic effect on your network. In many cases, this rapid increase in traffic could create spotty connections and slower speeds for everyone.

If your wireless network isn't ready ahead of time, you could incur bottlenecks that not only harm the connection

speeds of tablets, but also every other device in your company. You should consider how many devices will connect to your network at any time and

how much of your networking resources they will use. Then plan accordingly to avoid overly taxing your network and possibly incurring downtime. **P**

Assess The Need For Tablets

Before you even start looking at which tablets to purchase, make sure that your workforce will actually use them. Letting employees bring in their own devices is one thing, but choosing to issue tablets or fully support them should be a needs-based decision.

"Most companies should be preparing for an increasingly mobile world regardless, but if they are officially supplying or supporting tablets, make sure there is an actual use case for it," says Michael Battista, Ph.D., consulting analyst at Info-Tech Research Group. "Tablets are increasingly ready for real work, but only certain kinds of work. Don't jump on the bandwagon just because it's what the cool kids are doing, but also don't resist change if it has a purpose."

BONUS TIPS:

Start With A Pilot Program

"Tablets won't be the silver bullet to solving all mobility problems," says Forrester Research analyst Christian Kane. "They will be right for some employees and wrong for others." Thus, he advises to begin deployment with pilot programs and understand that the platforms themselves are still very

immature. "Deliver what you can today given the immature technology, security and management requirements, and the status of current hardware/software life cycles, and then expand as you can," he says.

Consider Mobility Management

Particularly for small, overworked IT departments, a fully integrated enterprise mobility

management solution that oversees management of the tablet and data on it is a good fit, says Andrew Borg, research director for mobility and collaboration at Aberdeen Group. "There's a whole variety of pricing models and capability sets that really can meet almost any need," he says. Options include cloud-based, on-premises, and hybrid solutions and evergreen and per-seat licensing arrangements.

Test Your Security Defenses

Help Ward Off Attacks By Discovering & Patching Holes In Your Network & Applications

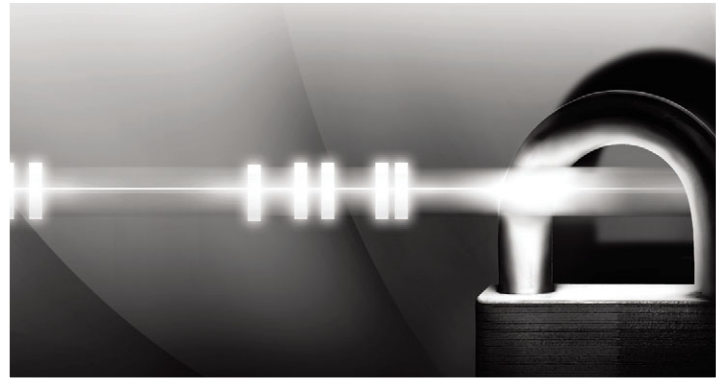
NO NETWORK, APPLICATION, or server can be protected from every possible attack. The only way to fully protect yourself from hackers and to make sure your resources are safe is to regularly test your defenses with the help of vulnerability scanning solutions or full penetration testing from outside agencies. Regular security testing will help make your data center stronger and more secure.

Think Like A Hacker

To prevent attacks from hackers, you need to understand how they think. “Attackers are not stupid,” says Jim O’Gorman, malicious entity simulator at Offensive Security. “There is no reason to go after a hardened

target. If you want into an organization, the best route to take is to conduct your information gathering and identify what they are running, how they work, and where they are defended. Then just wait. In time, an opening will present itself. This might be in the form of a new vulnerability, something happening in the news you can take advantage of, or something as simple as a new attack presenting itself. That’s when you strike.”

Because hackers are always searching for the path of least resistance to infiltrate companies, keep your guard up at all times and let your security systems evolve alongside the growing threats. This is also why regular penetration testing is



absolutely essential. You need to fully test the security measures you have in place, otherwise you can’t be sure they’ll live up to their potential when an attack actually occurs.

Determine If You Need Outside Help

There are many options available for testing your defenses both internally and with the help of third-party experts.

O’Gorman says organizations need to start taking advantage of free vulnerability scanning solutions or purchase licenses to other scanning tools so they can run Metasploit scans, which are designed to find vulnerable spots in your network. But many companies don’t even run these basic tests. O’Gorman recommends running these “rudimentary checks” on your own before calling an assessment team for additional testing.

James McCloskey, senior consulting analyst at Info-Tech Research Group, agrees

that free vulnerability scanning tools are helpful, but he also recommends considering the Open Web Application Security Project (OWASP) when testing applications. OWASP gives companies “a lot of testing tools that are open source,” he says.

There will come a time when you’ll need the help of outside experts, who will not only give you fresh sets of eyes but also give you the benefit of in-depth, real-world penetration testing. It’s up to you to find a vendor that has the right experience.

“Very few organizations have a set of dedicated ‘attackers’ that focus on offensive security techniques,” O’Gorman says. “When you bring in outsiders to conduct the assessment, they should be well experienced from multiple assessments they have conducted and leverage that unique experience to increase the quality to a level that cannot be done in-house.”

Implement A Web Application Firewall

Sometimes even the best pre-emptive testing won’t prepare apps for the rigors of life outside the organization, and you may need to patch unexpected security holes. But during that process or in a case where there’s no quick fix, you may want to protect the app from further attack by installing a Web application firewall.

“The results of these tests may indicate things that can be fixed very quickly, and then you can get the software patched so it’s no longer vulnerable,” says James McCloskey, senior consulting analyst at Info-Tech Research Group. “Alternatively, if that’s a big can of worms that would be opened to revisit it, then the organization can focus on alternative protection approaches like a Web application firewall and tune it specifically to mitigate it against the risks that the application is vulnerable to. Interposing a Web application firewall buys you some time to fix your applications properly, if at all.”

Decide Whether To Test Regularly Or Continuously

McCloskey says certain applications or systems may require periodic testing, possibly on a quarterly basis, if they aren't necessarily mission-critical. Companies in certain industries, such as the payment card industry, are required to do quarterly external vulnerability and penetration testing that covers both applications and the network. Companies should run tests "any time the application is substantially changed" in addition to regular testing, he says, to make sure recent updates haven't opened up new security holes.

If your organization has a lot of systems to monitor and maintain, it may be worthwhile to continuously test security using a vulnerability scanner to ensure network administrators aren't overburdened. You could take advantage of a network port scanner that searches attached devices and helps "detect vulnerabilities that are actually exploitable," McCloskey says. This system can also help you discover false positives, which will prevent you from wasting time on similar issues in the future.

McCloskey advocates frequent testing. "In my previous life, we would run it on a weekly basis," he says. "Out of those weekly results, we

would then farm those out to the various systems administrators and responsible parties and say, 'These are the things that you need to fix.' While there was a steep curve at the beginning to get that all set up and have people take action on it, the end result was that if something changes six weeks from now, a notification is provided to that systems administrator in a matter of days, you close the vulnerability much faster, and the systems administrators are getting these as periodic little blips as opposed to a big chunk of work."


Build Security Around Your Business Processes

"Complexity is the enemy of security," O'Gorman says, so companies should keep things simple when it comes to their applications and infrastructure. Be sure to build systems with testing in mind to make the

process that much simpler. "It should be easy to know when something breaks and why it broke," O'Gorman says. "Not only does this make correcting issues easier, but testing becomes far easier, as well."

For companies where building simpler systems isn't necessarily an option, McCloskey says it's important that administrators embed security into everything the company does

so that future tests will yield fewer vulnerabilities.

"It's a very strong security organization that has a small core of security experts who run the tools and do project assessments, and then are supplemented by the eyes, ears, arms, and legs of all of the systems administrators and application developers out in the field that are providing supporting security services," he says. 

Look Within For Security Threats

Remember that some security threats come from employees inside the company. "Employees are often one of the largest security risks to the organization," says Jim O'Gorman, malicious entity simulator at Offensive Security. "Part of the reason for this is that workflows are often designed with what would be easiest for IT to deploy and maintain, not what works for employees. It's worth the time to understand what an employee's job is and then find ways to make it easier for them to do the right thing. Water is going to run downhill and employees are going to do whatever makes their job the easiest, so make the easiest solution the secure one."

BONUS TIPS:

Know Your Applications

"It's important to know not just how complex systems work when everything is going right, but also to understand how they fail when something goes wrong," says Jim O'Gorman, malicious entity

simulator at Offensive Security. "Understanding failure points is critical for improvement and is why stress testing is part of every manufacturing process around."

See Better ROI Through Security Testing

"There is a limited amount of money that can be put into

defense on an annual basis," O'Gorman says. "But with a properly conducted assessment, you can identify the most likely areas of the infrastructure to be attacked. This allows you to put defensive money into the high-impact areas, allowing you to get the highest possible return."

Incorporate SSDs Into Your Storage Plan

When Used In The Right Situations, These Drives Can Help Gain Efficiency, Performance & More

FOR YEARS, EXPERTS, analysts, and seemingly everyone else who deals in storage have been advocating the benefits of implementing SSD and flash storage in the enterprise. Improved efficiency and performance, lower power consumption, and greater reliability are among the reasons why. Recently, SSDs and flash storage have garnered attention for their potential in virtualization, cloud computing, database, and other areas.

Although pricing has historically been an impediment to embracing SSD/flash for enterprises, this is changing, making this storage option arguably more attractive than ever. Here is some advice for incorporating SSD/flash storage into enterprise storage plans.

The Benefits

Why implement SSD storage now? Jim Handy, director at Objective Analysis, says first and foremost, doing so can get

enterprises out of a bind. “Most first-time SSD users try SSDs because the alternative is to add half-million dollar SANs in proportion to the growth of their needs, be it a growing population of online users or mushrooming data,” he says.

Handy says most IT managers he’s interviewed find that adding SSD/flash storage extends the usefulness of existing hardware “far beyond the capabilities that otherwise would have cost them several million dollars.” After discovering this, Handy says, “their other hardware needs decline. They don’t need to max out the DRAM in their systems.”

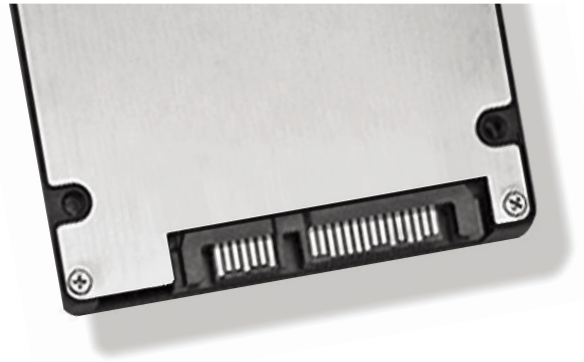
Often, Handy says, enterprises need fewer servers because in some cases the number of virtual machines per server increases. “In both virtualization and database installations, reduced server count means reduced licensing fees, which more than compensates for the cost of the flash storage,” he says. Further,

having less hardware in the data center can result in power and cooling benefits and improve reliability, as “the less there is, the less there is to fail,” he says.

Common Use Cases

Beyond traditional DRAM-based SSD usage scenarios (database, indices, journals, redo logs, or other high IO activity), NAND flash SSD is being deployed in other IO-intensive, response-time, or latency-sensitive roles, says Greg Schulz, senior advisor with Server and StorageIO Group. This includes server virtualization and VDI in which aggregation causes storage IO aggravation, he says.

“Another growing area is expanding awareness around storage IO consolidation, which is replacing many underutilized HDDs with fewer, yet fast, large-capacity NAND flash SSDs, also known as EFDs [enterprise flash drives],” he says. “This is similar to the storage capacity scenario where large-capacity SAS and SATA or near-line drives are



Key Points

- To apply the right SSD/flash approach, know the need or bottleneck you have.
- SSD/flash storage is being implemented in such DRAM-based scenarios as databases, journals, and other situations with high IO activity.
- Enterprises are deploying NAND-flash SSD for IO-intensive, response-time, and latency-sensitive purposes.

used for space capacity, however lack performance.”

Handy says today the majority of slowdowns stem from storage bottlenecks. “SSDs and flash storage can eliminate these to achieve significantly higher performance in most systems without any other changes,” he says.

Over the long term, SSDs will be in every data center, but embracing flash storage early on will provide a cost and performance advantage over late

Get Started

Greg Schulz, senior advisor with Server and StorageIO Group, recommends gaining access to metrics that can help determine how effective SSD solutions or technologies are performing and what impact they’re having on the business and applications. “It’s one thing to be able to say SSD is faster or show marketing metrics that may not matter to the business; it’s another to show the business or have them experience things being done quicker or with less wait time,” he says.

adopters, he says. Thus, “it’s a good idea to get onboard early, even in a small way, just to understand how to use it,” Handy says. Near-term adoption, meanwhile, is pretty simple. “Give it a try. Buy an inexpensive caching setup and install it. If you find that a little bit helps, try out more, until you reach a point of diminishing returns,” he says.

Keys To Implementation

The key to implementing SSD/flash storage is knowing a need or bottleneck exists; finding where the need/issue resides; and gaining insight to apply the right approach, solution, and technology, Schulz says.

“Keep in mind that a small amount of SSD in the right locations can go a long way, not to mention being very cost-effective if there’s a business benefit, while a lot of SSD in the wrong place will cost a lot of cash,” he says.

Schulz stresses that conversations regarding NAND flash SSD shouldn’t focus on if it’s in your future but rather center on when, where, how much, how to implement, and how it can complement and enable existing technologies.

From a cost-justification perspective, approaching SSD technology from a “cost-per-IO or transaction or doing work basis” and discerning how it can reduce costs is better than comparing and proposing solutions based on cost per gigabyte, Schulz says.


“If there’s a business benefit of boosting productivity or getting the same or more work done faster, the business justification can be fairly straightforward.”

Handy says currently there are few tools to help steer managers to a good solution. “Everyone is pretty much forced to try different solutions until they find the optimum one,” he says, but typically the “first small implementation makes such a big difference that further upgrades are optional.”

Handy advises not using a client SSD for enterprise purposes. Although significantly less expensive, client SSDs wear out faster than enterprise SSDs and don’t perform as well under workloads with a higher percentage of writes,” he says.

Handy also recommends implementing a systematic way of monitoring an SSD’s SMART attributes, which are documented in the SSD’s specifications. Though an SSD will indicate over its life span how much wear

it has had and how much more it can give, “there aren’t programs that monitor it automatically, at least not yet,” Handy says. Monitoring SMART attributes

monthly or quarterly can provide plenty of advance notice of an impending failure to take preventive action before an SSD reaches its write limit, he says. 

Action Plan

Survey the landscape. Determine what actual need or problem it is you’re seeking to fill or address with SSD/flash solutions.

Eye your servers. Decide if your needs are localized to one or a few servers or if multiple servers that share storage are involved.

Read and write. Decide if you’re facing an IO, bandwidth, or latency response-time issue and also determine what IO sizes, reads, and writes are involved.

Select the right amount. Use the information you gain to decide where to implement the right amount of different possible SSD types.

Pick and choose. Experiment with various SSD solutions in order to find the best cost and performance benefits.

Top Tips

Try before you buy. Beyond comparing notes and asking questions of counterparts from other companies, trying SSD storage before committing to a purchase will reduce panic and stress.

Investigate. Rather than taking a cost-per-gigabyte perspective, ask what the cost of performing a transaction, serving a file or video, or performing another activity is and how SSD can remove complexity.

Play nice. Determine how SSD technologies will fit in and co-exist with your existing environment, including storage used for shared needs, and verify the existing or new storage solution can actually deliver on performance claims.

Diagnose Network & App Performance Issues

Monitor Every Facet Of Your Data Center To Zero In On Specific Problems

EFFORTS TO DIAGNOSE and solve network and application performance problems can be tedious, especially if they don't occur on a consistent basis. And if you wait until your end users speak up, it might be too late to fix the issue before impacting productivity and uptime. The key is to think ahead and be wary of key indicators. If you put preventive strategies and technologies in place beforehand, the troubleshooting process will be less stressful and time-consuming

Establish A Process

When it comes to performance issues at any level of your data center, the worst thing you can do is react to problems as they occur. Although this is sometimes inevitable, it doesn't have to be the general rule.

For example, Jean-Pierre Garbani, vice president and principal analyst at Forrester,

says companies shouldn't "deploy an application if they have not put the necessary monitors in place to make sure it will function properly and that the IT operations group is effectively able to not only detect but solve any types of problems that might occur."

Monitoring is only the first step. You also need to designate roles for your employees and put steps in place to address problems and solve them in a timely manner.

"Establish an incident and problem management process by which the different levels of management are defined," Garbani says. "Who gets alerted? What do they do? To whom do they forward the problem? How is it corrected? Establish a process and then, for each step of the process, understand what tools are needed. They don't need to have a broad vision of



the infrastructure; they just need to understand their own space. You need to think about how you organize it and what tools you provide to each level."

Know Key Indicators

When you're trying to diagnose specific application or networking issues, time will be one of your best indicators. "From the network, you have the possibility to understand when a transaction comes in and when the answer goes out," Garbani says. "Therefore, time to process is usually the right way to pinpoint whether there's a problem."

You can run diagnostic tests by sending packets throughout your network, into applications, and wherever else you think necessary. By measuring how much time it takes for that information to transfer, you should be able to determine where your latency or processing issues are originating.

But in addition to time, Garbani also stresses the

importance of network, compute, and storage capacity.

For instance, with a network, it could be something as simple as "someone watching a basketball game on the LAN and sucking all the bandwidth," he says. On the server and compute side, an employee could unexpectedly spin up too many virtual servers and eat up resources. And when it comes to storage, Garbani says that it can come down to how a database is configured physically on disk. If application performance issues are the symptoms, then capacity could be one of the root causes.

Consider A Comprehensive Management System

Mark Tauschek, principal consulting analyst at Info-Tech Research Group, says although it's important to monitor the end-user experience and listen to feedback, "by the time you hear it from them, it's too late to be proactive." This means that once

Overall Visibility Is Crucial

It's crucial to get a big-picture view of your infrastructure in order to avoid finger pointing due to the vagueness of sympathetic alarms, according to Mark Tauschek, principal consulting analyst at Info-Tech Research Group. If your networking, application, and server teams are all separate, there may be an alarm somewhere in the data center, but each individual monitoring solution will claim that everything is OK in that specific department. "There are several pieces, like application delivery controller or a WAN, which add to the complexity," Tauschek says. "The key really is to get comprehensive visibility into network, server, and applications."

you hear that an application isn't performing correctly or the network connection is slow, "you're already into troubleshooting mode and trying to reactively resolve the situation," he says.

A better approach, Tauschek says, is to use a comprehensive systems management solution or a network management system (NMS) that will provide visibility into your systems.

"A good NMS or systems management solution is going to allow you to drill down and find the root cause much more quickly," Tauschek says. "You're going to be notified of it proactively, depending on how you set thresholds for alarms, before users start calling you."

Troubleshoot The Layers

When going through the troubleshooting process, start at the

bottom layer and then work your way up. This approach makes it possible to rule out certain issues and ensures that when you do find a problem, it is more than likely the right culprit.

"You start at layer one, which is physical," Tauschek says. "Make sure that you actually have connectivity whether it's on a wire or with RF being the physical medium. You can use a spectrum analyzer, a port analyzer, or a cable tester."

From there, you get into the second layer where you can look at the network and specific connections. Eventually, you'll get to layers four through seven, which all have to do with "flows and applications," Tauschek says.

"It's really a process of moving up the stack and by the time you're up to layer seven, you're

really into the granular application level of troubleshooting." At this layer, you're looking at the potential for bad code, a bug in an application, database backend

issues, and more. But before you get to the application level, you have to make sure your physical infrastructure and networking components work correctly. **P**

Don't Assume Application Limitations Are Normal

Jean-Pierre Garbani, vice president and principal analyst at Forrester, says that too often "there are things people don't look at because they take it as part of the normal working of an application." He says that "from the get-go, there may be something wrong with the software or with the way the application or server is configured."

For example, Garbani remembers when he was producing software for car dealers and found that the maximum number of workstations the software could support on a server was 15, which caused the company to lose bids. Then, "one day we found that this limitation was a software issue, and once it was corrected, we could increase the number of workstations," Garbani says. "Sometimes what we consider normal is abnormal."

BONUS TIPS:

Broad Before Purpose-Built

Mark Tauschek, principal consulting analyst at Info-Tech Research Group, says that companies will get more value if they opt for a "broader systems management solution," instead of trying to monitor performance with individual solutions. He says that "purpose-built solutions tend to be more expensive" and

"you don't get as much traction or mileage out of them." Tauschek also says that while larger organizations can "more likely justify the costs of purpose-built solutions," this may not be the case for smaller businesses. And if for some reason you can't seem to nail down an issue with a comprehensive solution, he recommends you simply call somebody in to help you troubleshoot or rent a tool.

Utilize Historical Data

Whether you're trying to pinpoint performance problems or make sure that your fixes are actually making a difference, you first need to establish an historical baseline. It's always helpful to know what's currently going on with your network or applications, but if you don't have a baseline figure to compare it to, you'll have no way of knowing whether your optimization

efforts are effective. "You can look at incidents like the lack of bandwidth or lack of resources, which may be temporary," says Jean-Pierre Garbani, vice president and principal analyst at Forrester. "It would be helpful if you had some level of analytics that's using the data, something that historically shows you, on this day of the year, the normal traffic on your network and the normal flow of information in and out of a given application."

Data Center Best Practices For Backup & Recovery

The Top Tactics, Technologies & Strategies You May Want To Implement

EVERY DATA CENTER MANAGER knows the importance of backup and recovery. But that doesn't mean every enterprise is doing all it can in terms of its processes, testing, and efforts to implement more efficient strategies. Here are some tips related to backup and recovery best practices and implementing technologies and tactics other companies find successful.

Room For Improvement

Greg Schulz, senior advisor at Server and StorageIO, says even enterprises with top-notch optimal conditions can improve or adapt their backup and recovery efforts to support new applications, tools, and technologies or enlist data protection where it should be. Companies using the latest, greatest hardware, software, and virtualization, for example, can still revisit items such

as service-level expectations, needs, wants, costs-to-deliver service, and ways to remove rather than cut costs, in addition to increasing durability while streamlining processes, testing, and more, he says.

David Hill, principal at Mesabi Group, believes the first imperative to improving backup/recovery processes is reducing what needs to be backed up.

Recent research, he says, indicates companies must preserve 1% of data for litigation, 5% for records required by law, and 25% for current business value. "That means 69% of all data has no business value," he says. Although deleting this data would be nice, actually finding it and getting permission would be difficult, he says.

Pinpointing data that doesn't merit any backup, he says, can greatly reduce cost and



management resources. Also, determine the data that's useful and fixed and place it in an active archive so users can still access it. He says enterprises only need to copy the data for data-protection purposes when they "ingest the data into the archive. That removes this data from the backup/restore process."

Consider Virtual Tape, Snapshots

Virtual tape, says Quocirca founder Clive Longbottom, is one of the most widely used backup and recovery approaches.

"VTL was put in place to speed up BR [backup and restore], as backup periods were getting to be longer than the windows available to them," he says. "By backing up to disk but pretending it's a tape, backup can be speeded up immensely," as IT can check backups at disk vs. tape speeds.

Longbottom also says using snapshots rather than full

backups can provide more instant abilities for restoring a file because rather than losing everything that occurred between the last full (or incremental) backup and now, snapshots enable backing up files more regularly without overly impacting the server, storage, and network resources.

Hill recommends testing backups frequently and thoroughly enough as to instill confidence that IT can restore everything needed within SLA terms, something that's "easier said than done" because testing can't be disruptive and drain personnel resources. Software can help test on essentially a continuous basis, he says, though this can be costly.

One problem with testing is it involves the backup copy on disk or tape and servers that must run the applications that are restored, "otherwise, how do you know that it worked?," he says. "A disaster recovery site might provide the right

Enable Self-Service

Quocirca founder Clive Longbottom advises moving from a help-desk-driven data restore model to self-service one. "Mirror a user's data with a degree of versioning in a simple manner so that the user can recover an individual file as needed from an easy front end," he says. "As far as possible, divorce the files and data from the desktop (which should be centrally hosted as a hybrid VDI model anyhow), so that should the user's device be lost, stolen, or otherwise compromised, it isn't a case of having to wait for a restore of an image onto a dissimilar device."

support,” he says. Also, if backing up to the cloud, the vendor may have testing strategies. “Unfortunately, testing often isn’t done as frequently or as well as it should be,” he says.

Schulz advises testing “beyond the component level,” or going past restoring a file, volume, or object and checking that data can be opened and used; restored to an alternate location; verified for contents, decryption, access control lists, and other security or access controls; and have permissions restored. Periodically check testing procedures to ensure you have copies and they’re the right version or generation.

Look At Current Tech In New Ways

Hill says a market is growing for backup/recovery that meets needs related to server virtualization and backing up to the cloud. “Traditional products may or may not play in these two non-traditional markets.”

Although deduplication is a powerful, valuable trend, Hill says, “it’s not a panacea for all the changes that are happening.” He does consider software that can help monitor protected data, issue alerts when a backup fails, and work around bottlenecks as essential.


Schulz suggests enterprises use current technologies and tools in new ways rather than as replacements or using them in the same ways as predecessors.

“For example, if tape was used for hourly backups and now disk is doing that role, why is an hourly back-to-disk occurring?” Instead, consider moving to hourly or 30-minute snapshots and then a daily backup disk-to-disk or disk-to-cloud. He also suggests breaking free of using siloed data protection or having separate groups work with backup administrators in an uncoordinated manner. Align these and streamline processes in order to do more in less time and remove complexity and costs, he says.

Aim For Business Continuity

Longbottom says enterprises should regard backup and recovery as a last resort. “The main aim should be for business continuity, which requires something a bit different to BR,” he says. BR should be more a part of an

archival strategy for government, risk, and compliance reasons, whereas areas such as accidental file deletion; accessing earlier document versions; and stolen, lost, or failing devices will require a different approach that enables rapid regain functionality through self-service.

“BR shouldn’t be regarded in the way it was, say, five years ago—it’s just a means for long-term archival of data. Now, we need to look at online and near-line data mirroring so that the business maintains operational capabilities through any issue,” he says. 

Think Through Service-Level Agreements

Mesabi Group principal David Hill says thinking through SLAs—whether an agreement with users or for IT planning purposes—is critical if moving to a “true cloud where real SLAs are essential for IT as a service.” Achieving these SLAs means thinking through what QoS metrics are needed. “Notice that the SLAs with their QoS metrics aren’t the same for all applications. For example, the RTO and RPO should be more stringent for mission-critical applications than for less time-sensitive applications,” he says. This means ranking how applications will be recovered if needed, as treating all applications equally would cause data protection costs to rise.”

BONUS TIPS:

Keep Things Simple

Quocirca founder Clive Longbottom says centralizing desktops through a virtual desktop infrastructure (VDI)-style approach (“well, a hybrid one including the use of application streaming or paging”) puts everything in the data center and then allows data management to be run against a more constrained set

of assets. Mirroring, combined with backup and recovery, then becomes far easier and effective for end users and the business, he says.

Do More Than Cut Costs

Server and StorageIO senior advisor Greg Schulz advises looking “beyond the temptation to simply cut cost around backup/data protection” and instead focus on cost removal. Also look for and eliminate

complexity, streamline processes, reduce data footprint with archiving, and use other techniques in addition to “reducing what actually gets protected with compression and dedup,” he says. “Not everything is the same in the data center or information factory—from applications, service requirements, threat risks—so why treat data protection the same for everything?,” he says.

Trends In Cabling & Cable Management

Get The Best Benefits Through Planning & Preparation

CABLING AND CABLE management often don't receive the respect or attention they deserve.

Mike Jude, program manager at Frost & Sullivan, says data center cabling that's done well can increase throughput, improve power consumption, and reduce heat generation and crosstalk. "You can save a bunch by just paying attention to your cabling," he says. "Unfortunately, it's easy to not pay attention to your cabling."

To that end, there are a few newer trends and technologies occurring in cabling, as well as tips for applying better cable management within the data center, that can help ensure your data center cabling is as good as it can be.

Go Modular

Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com), says cable management is directly tied to larger data center trends that are now occurring.

"Recent trends in data center design and operations are leading to a reduced overall footprint, with a resulting savings on both capital expenditures and operational expenses, including power, cooling, and systems management, all without sacrificing performance and reliability," he says. As densities increase, it's becoming increasingly important to spend time to create a well-developed cable management plan.



Modular designs are currently a foremost trend in data center cabling products and technologies, he says. "Even in smaller data centers, where capacity expansion and management are relatively infrequent, the use of modularization of cabling will often determine how quickly and reliably new installations are performed," he says.

Use Structured Cabling

Jude hails structured cabling as a "big deal" because it approaches cabling from a functional vs. aesthetic point of view. Essentially, he says, "you have cable domains that allow you to access particular resources in a particular way. Cables may start off in, say, a server rack all going in the same direction, but they can go in different directions based on the ultimate destination, whether it's dedicated storage or making a connection to an external resource."

Overall, structured cabling enables the functionality that IT is trying to achieve, optimize for, and maintain, he says. For example, if a cable fails, IT doesn't have to tear a bundle apart to get to it. "You can replace, mend, redirect, all sorts of things that you don't have a chance to do if you cast your cabling scheme in concrete from the beginning," Jude says.

Koty says cabling reliability in the data center is linked to the quality of products used and structural design and integrity of the cabling design. "For scalability, movement away from traditional direct-connection patch cords to a structured cabling system is a top priority," he says. "Structured cabling improves cabling convenience and ease of management in a higher-density environment."

The TIA-942 standard, he says, recommends installing the highest-capacity data cables possible to reduce the need for re-cabling in the future.

Know Where To Turn For Help

For those IT and data center managers inexperienced with structured cabling and cable management in general, a good deal of help is available via software and guides that companies have published, says Frost & Sullivan program manager Mike Jude.

In general, Jude says, the notion that "you can't manage what you can't see" applies to cabling, so he recommends using software, spreadsheets, or other means to create a complete inventory of cabling present in the data center. Some software assists in this task via automation features and can also help with getting started with managing cabling in a structured cabling approach. Having that kind of automation in your back pocket "will pay dividends downstream when you start doing things like upgrading or adding resources and you want to know where cables go, when you put them in, and how you can consolidate these things," he says.

Consider Airflow & Power

Cabling can have a significant positive and negative influence on airflow and heat. To create a positive influence with cabling, always use a hot-/cold-aisle configuration when laying out server cabinets, Koty says. "Only run cables in the hot aisles," he says. "If space is a concern, use tiered racking or trays to separate and elevate the cables within the hot aisle. If cables need to be run in the cold aisle, spread them out on the floor to prevent airflow restrictions."

Koty also advises running cables in straight rows and avoiding crossing cables over cold aisles with 45-degree runs in order to save just a few feet of cable length to cut costs. "You want to keep all cold aisles completely open for better air delivery," Koty says. Also make sure to use grommets to seal openings in the floor panels where cables pass through, he says, to limit airflow bypass and to maintain the integrity of the air plenum.

When running power cables, Koty says to use the closest PDU/RPPs to avoid running extra-long cables, which cost more and add air restrictions under raised floors. Running longer cables can also cause voltage drops. "Remember, as voltage drops, amperage will increase, thus costing more to power the servers," Koty says. For power whips, color-coordinate cables

with PDUs and label them with the PDU panel, ID, and breaker number.

The Need For Speed

Laura Viars, senior sourcing specialist at Rackmount Solutions (800/352-6631; www.rackmountsolutions.net), says the need for faster networks with greater bandwidth is a developing trend influencing cabling.

"Today, most 10GbE networks operate with no issues. However, as virtualization becomes more and more popular, IT managers are becoming cognizant of the potential need to upgrade to 40/100GbE equipment as a result of the increased information loads," she says. "Upgrading the hardware is costly enough, but this switch also requires a migration from copper to fiber cabling

and from standard fiber connections to ones with a smaller form factor."

Viars says small to midsized enterprises can delay upgrading

to 40/100GbE by addressing current hindrances within their networks, including replacing outdated gear and revisiting the cabling topography. ^P

Don't Corner Yourself

Too many data centers start in the corner of their room assembling racks in rows without an overall plan or taking airflow and cabling pathways into consideration, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). To maximize space and efficiency, before installing the first rack or cabinet, consider the raised floor space and shape and the infrastructure layout, including placement of PDU/RPPs, CRAC/CRAH units, and power and communication equipment, he says.

"Having a pre-planned layout for all servers and cabling should be a team effort between both the facilities and IT departments," he says. Everyone should stick to the finished plan without exception. If planning new construction, use structured cabling infrastructure to support future needs while reducing infrastructure cost, he says.

BONUS TIPS:

Don't Neglect The Smaller Network

Poor cable management is seen more often in smaller networks, says Laura Viars, senior sourcing specialist at Rackmount Solutions (800/352-6631; www.rackmountsolutions.net). But the good news is more IT managers are looking closely at the

states of their current cable management to achieve maximum airflow and keep cooling costs down. Be mindful to avoid basic pitfalls such as cabling impeding airflow under raised floors.

Address Cost Issues

Cost is a major cable-management issue, Viars says. Cabinet manufacturers include or provide cable-management

systems for their cabinets, but often they aren't cost-effective, she says. A manager unfamiliar with other options available might opt to leave off the cable management to cut costs or stay within budget, she says. There are many affordable cable-management solutions, including simple lacer bars and Velcro wraps, universal wire channels, and D-Ring-type solutions.

Strategies For Better Power Management

Use Color-Coding, Increased Intelligence & Other Approaches

THE BENEFITS enterprises can realize from better managing the power running through their data centers are well-documented, including financial and efficiency gains. But knowing where to start making actual changes to bring about those benefits isn't something every enterprise is clear on. Here is some advice.

Add Color

As data centers increasingly add more cabling, IT professionals must get more creative in a management sense, says Jenna Maertz, Info-Tech Research Group consulting analyst.

One approach is using color schemes to quickly identify and trace cables. Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com), says color adds more than just a "wow" factor; it provides

notable advantages in managing a mission-critical infrastructure.

Though using color coding to differentiate power feeds has been around for years, he says, it's only recently gained wider acceptance. Koty recommends considering color-coding branch circuit power whips to manage power feeds from PDUs/RPPs all the way to servers; color labeling rack PDUs; using colored jumper power cords; and using color-matched conduits, receptacle boxes, and faceplates.

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says while efficiency is a chief power concern, organization is also vital. "Redundant power solutions are becoming a must in modern data centers because uninterrupted service is a priority for most," she says.



Although it's common practice for one cabinet to contain two PDUs drawing power from different sources to create redundancy, "this can cause confusion for data center managers trying to determine what is powering what," she says. "Color-coding the PDUs and their cables is a simple, affordable way to create a visual correlation between the power source and the PDU/rack, therefore eliminating any confusion and/or unplanned downtime during service."

Enlist Management

Implementing an effective power management solution is crucial to maximizing efficiency and reducing operational cost, Viars says. Using the proper technology enables monitoring and managing all aspects of power usage down to the device level, "essentially making wasted and poorly managed power a thing of the past," she says.

A well-thought-out power management plan entails using

smart PDUs in each rack with each reporting to one system that managers can monitor and manage anywhere. Newer systems provide tools, such as capacity planners, trend reports, and the ability to identify wasteful IT components, to help lower PUE.

"We all know that lower PUE equals lower costs, so while these solutions might cost a bit more upfront than traditional ones, they'll pay themselves off and then some in reduced power costs," Viars says.

"These newer systems also have increased functionality in terms of status alarms and reporting, ensuring that your equipment remains powered at all times and that you are instantly made aware of any potential emergencies wherever you might be."

Note Emerging Strategies

Rich Feldhaus, product manager at Tripp Lite (773/869-1234; www.tripplite.com), says newer PDU strategies include

Gain Intelligence

Rich Feldhaus, product manager at Tripp Lite (773/869-1234; www.tripplite.com), says at a minimum, deploy metered PDUs to help eliminate installation errors and overloads. Otherwise, invest in intelligent rack PDUs and UPS systems with integrated network communication abilities. Monitor power consumption against available capacity, he says, setting notification thresholds at levels "well below full capacity so small issues don't become big issues with little time to react." Network power consumption will typically increase over time, he says, so plan ahead with facility managers for how to add capacity and electrical panels quickly and smoothly when needed.

the use of higher-capacity three-phase units to power individual racks and intelligent PDUs with voltage, current, humidity, and temperature monitoring. Also, more switched PDUs are being used to reboot unresponsive equipment. "With PDUs offering individual outlet-level current monitoring, users can see how much power each piece of equipment is drawing and plan for additional capacity down to the device level well in advance of problems due to overload."

As businesses rely more on continuous uptime for IT systems, Feldhaus says, smaller enterprises are embracing the same approaches larger data centers are using. "These include the use of intelligent, managed PDUs with current and temperature reporting, redundant power with two paths to each piece of

equipment, and switched PDUs with remote reboot capabilities."

Feldhaus continues to see companies rely on less-intelligent PDUs as their network infrastructures become more complex, often viewing the added expense of PDU communication and switching features as non-essentials. "Businesses need to evaluate the cost of downtime and realize that downtime costs in most cases far exceed the cost of installing an intelligent PDU in the first place," he says.

Choose Equipment Wisely

When purchasing new technologies, account for power management, Maertz says. Identify the most effective infrastructure and think about the potential long-term savings.

"A higher initial CAPEX might be justified to achieve

energy efficiency," she says. Consolidating and optimizing existing systems can also simplify power management, she says.

Koty suggests well-planned equipment refreshes. "This is your opportunity to upgrade for the present and future. Maximize capacity and reduce power consumption through intelligent technology refresh decisions," he

says. This should include purchases for facilities infrastructure and IT servers and all cooling equipment, cooling towers, and CRAH/CRAC units and pumps. For data centers located in cooler regions, Koty says to look into equipment with free cooling options, which "can cut cooling costs as much as 40% a year depending on the climate." ■

Align & Conquer

Info-Tech Research Group consulting analyst Jenna Maertz says in many larger organizations, two different groups manage data centers: IT, which is responsible for the technology aspect, and facilities operations, which is responsible for the facilities infrastructure. "Before organizations can properly establish any sort of power-management strategy, there needs to be either alignment between the two groups or a higher authority that can implement a strategy," she says.

BONUS TIPS:

Adjust Your Needs

Some advanced monitoring solutions might be overkill for small to midsized enterprises, says Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), as their loads typically aren't so large "as to require the level of detail and control that these applications provide." She

advises looking at more basic, yet still effective, monitoring and alarm solutions that come standard with most battery backup systems. "Fortunately, most newer PDUs and UPSes have many of the desirable features that ones for larger-scale applications do, such as color-coded casings and environmental monitoring capabilities, while still being functional as an independent unit vs. being networked to other PDUs."

Color-Code Power Whips

Color coding power whips can ensure you're utilizing both A and B paths for all dual-corded equipment, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). He recommends labeling server cabinets with colored labels to match the power whips feeding them. Label the PDU/RPP feeding the server, the panel

in the PDU/RPP, and the circuit breaker number, he says. "This way a quick walk-through will enable you to know which servers are dual-corded, so if you're shutting down a power path for maintenance, you know what equipment will not power down," he says. All dual-corded equipment should be fed from PDU/RPPs loaded less than 50% to allow for the failover when shutting down a power path, he says.

Maximize Server Utilization & Effectiveness

Ensure You're Tapping The Potential Of Your Servers & Assigning Proper Workloads

ENSURING SERVERS are performing well requires maximizing how they are used and ensuring your hardware can fully support the enterprise's application and workload requirements. This can also mean determining if consolidation and/or virtualization are viable.

Compared to four or five years ago, this process is fairly easy, says Charles King, Pund-IT principal analyst. "There are hundreds or even thousands of success stories for use cases of virtually every kind," he says.

Here's some advice for gaining insight into server utilization and deciding if changes are in order.

Recognize When Change Makes Sense

Before you consider optimizing or upgrading your servers, you should first make sure there are actual reasons

to do so or that there is a potential for problems in the future. There are tell-tale signs, such as data bottlenecks and noticeable slowdowns in performance, but you may need to go more in-depth to find other indicators.

Pay attention to the capacity of your servers. Theoretically, all servers have a maximum capacity of 100%, but the main goal should be to get at least 70% if not 80% from all of your servers. This ensures that you are getting the most out of your hardware and you don't resort to upgrading when it isn't necessary.

Richard Csaplar, senior research analyst at Aberdeen Group, says there are numerous management-focused applications designed to monitor and track CPU utilization, with some that are sophisticated enough to automatically move virtualized applications



from a server that's overused to one with excess capacity. This ability, he says, "ensures that a greedy app doesn't endanger the performance of the others that share the server."

There are costs related to making server changes, including software licensing and potential training to use such management tools, Csaplar says. He recommends getting training on new products such as these, as their tools can be powerful and feature-laden. "If done correctly, these could be paid for quickly with the savings of reducing the number of servers in your infrastructure," he says.

Take Steps

Improving server performance can be as simple as understanding your applications and how much server capacity they use. One way to lower the hardware resources an application uses is to virtualize it. If that isn't an option, look at the applications on each server and determine

Key Points

- Poor server utilization is a major source of waste in most data centers.
- Servers should be viewed as an investment that the enterprise maximizes but matches to suitable workloads.
- Data centers that are several years old can benefit greatly from the management and consolidation benefits afforded by virtualizing servers.

whether they are truly necessary or are simply a burden on your servers.

Csaplar says virtualization is the best action an IT department can take in regard to the enterprise's servers. For data centers that are several years old, he says, the management and consolidation benefits realized can be great. Beyond eliminating old, out-of-warranty servers, engaging in virtualization can also increase

Get Started

When implementing server changes, potential products, tools, and resources required can include consulting with vendors and VARs for insight on system and software performance and appropriate solutions. "It basically comes down to system hardware and related software (OS and application), virtualization software (if applicable), system/data center management software, and any related services," says Charles King, Pund-IT principal analyst. Data centers might require staff training; maintenance contracts; system and network management tools; monitoring and management solutions; and sensors, meters, and intelligent power strips.

application uptime through such features as live application migration and high availability, he says.

Unlike the “old model” in which there was generally one application per server and not many specialized applications, Csaplar says, most processes today are automated and “there are supporting apps for everything—hence server sprawl.”

Virtualization, he says, enables loading as many applications on one server as the server can handle, with CPU and memory determining the application limit. Getting 30% more performance from each server means “30% fewer servers required, each with a service contract, power consumption, cooling requirements, space, management, etc.,” Csaplar says.


Avoid Potential Obstacles

As you’re working to boost the overall effectiveness of your data center servers, there are several issues that could present roadblocks or problems.

One of the first things to remember as you’re considering updates or changes is that, just because you can extend the life of a server with good maintenance doesn’t mean that you should keep using that server forever. If it’s been a number of years since a piece of hardware was replaced, you may actually save money by retiring it

and upgrading to newer, more efficient equipment.

With any changes, be sure to plan ahead. Pund-IT’s King says that beyond the time spent between order and delivery, completing deployment, testing requirements prior to bringing a new system into production, and additional typical occurrences, “issues related to consolidation and/or virtualization can also drop a fly into the ointment.”

He says avoiding such issues is one of the reasons that planning is so important, including in terms of apprising yourself of the challenges that are ahead, avoiding dumb mistakes, and preparing for the problems bound to occur anyway. 

Action Plan

- Assess the enterprise’s current server-related assets (hardware, software, etc.).
- Define the enterprise’s server-related requirements and expectations.
- Consult companies that have implemented technologies similar to those you’re eying.
- Set a budget with an acceptable ROI.
- Consult vendors about products (consolidation, virtualization, etc.) you’re considering.
- Set up a test environment for trial.
- Deploy the server into a production environment.

Top Tips

Continually monitor performance. Charles King, Pund-IT principal analyst, says it’s important for IT and data center managers to remember that each server’s “mileage will vary,” especially if IT consolidates multiple workloads or applications on virtualized servers. “Maximizing system performance is an ongoing process; you don’t just set it and forget it,” he says. “Any number of factors can push things out of whack.”

Defragment your hard drive for a boost. Server hard drives can often get bogged down with the constant reading and writing from intense applications. If you haven’t defragmented your drives for an extended period of time, it could help explain a sudden drop in overall server performance.

Keep it clean. Servers and other electronic equipment will always attract a certain amount of dust, but you can reduce the amount of dust. Limit who has access to the room and take precautions such as not opening cardboard or other boxes near servers. And take special care to clean up after any construction. Because of the volume of airflow in a data center, sheetrock particles often become airborne and may corrode components.

Build A Private Cloud

Benefit From The Cloud's Flexibility & Management Without Storing Data Offsite

MUCH OF THE FOCUS on cloud computing has been on the public space. However, for companies with compliance or security concerns, it's possible to build an internal private environment that provides some of the public cloud's flexibility and management without storing data and applications offsite.

But the private cloud isn't an option for all companies, because it requires considerable upfront costs and the right employee expertise to manage the environment.

People, Process, Technology

Before building a private cloud, take a look at your employees. "You can't take it for granted that this is just going to work like a traditional IT operation," says Ed Anderson, research director at Gartner. The private cloud takes a specific type of expertise, and it's up to you to ask

yourself whether your company has the right roles and the right skills to support it. But you also need to consider end users, Anderson says, because they are the ones that will benefit most from a proper private cloud implementation.

From there, consider the processes within your organization. "You need to take into account all of the impacts on the business," Anderson says. "What other organizations are going to be impacted and how will this change the way the business operates?" The private cloud is going to unlock some new capabilities for your organization, and it's important to determine what types of applications or data you want to move to the cloud and how you intend to use it.

If you know you have the right expertise in place and understand what business processes will be affected, you can start to look at your technology



and infrastructure. The private cloud will require some mass storage, virtualized servers, and networking devices to access that cloud-based information both inside and outside of the organization. It's possible you may have the proper infrastructure already in place to support a private cloud, but it all depends on how much capacity you'll need now and in the future.

Benefits Of The Private Cloud

One of the biggest disadvantages of the private cloud, when compared to the public cloud or other alternatives, is that you are responsible for all of the technology as well as the management of the cloud itself. But just because the private cloud doesn't necessarily provide that instant money-saving incentive doesn't mean it doesn't have its own unique advantages.

"The main benefit you're going to get from the private cloud is being able to have greater insight in terms of management and faster

Key Points

- Use the people, process, technology approach when planning your build.
- Understand the true benefits of the private cloud and make sure it's a fit for your company.
- The private cloud is not an ending point. Be prepared to continue down the cloud path and take advantage of future technological advances.

Get Started

Company leaders need to think about incorporating virtualization technologies into their environments to set a foundation for the private cloud, says Ed Anderson, research director at Gartner. Anderson sees this process as a "progression from traditional IT operations up through server virtualization, to more advanced distributed and managed virtualization, progressing to a private cloud." He says having virtualization in place as a foundation will "take care of a lot of the storage and networking issues that will come up with the private cloud."

resources for your employees," says Lauren E. Nelson, an analyst at Forrester. "You're essentially saving time for your managers and end users, so they can do things faster."

Anderson says that the companies that will get the most out of the private cloud are those that have more variability in their workloads. "If you have a pretty static environment that has a very predictable operational profile, then the private cloud will

have less value to you,” she says. This is particularly important for companies that have to deal with compliance. The private cloud lets you move some of that sensitive data to a more flexible environment without potentially sacrificing security like you might with a public cloud.

“You have to understand the real benefit you’re going to get from this,” Anderson says. “People generally rush toward cloud models thinking they’re going to save a bunch of money, but there are other factors introduced along with any cloud model, public or private, that you have to account for and just understand all of the trade-offs.”

Not A Final Destination

Before, during, and after the private cloud implementation, you should always be looking forward to what’s next for your company and for technology in general. “Most organizations look at the private cloud as a waypoint along their bigger IT journey,” Anderson says, which is absolutely crucial if you want to keep moving forward.


You may start with virtualization to get your feet wet before moving on to an internal private cloud deployment. Then, you may decide to move to a managed service “where you still might be running all of those assets in your own data center, but you’ve offloaded the

operational burden to a third party,” Anderson says.

From there, you could opt for a colocation arrangement where your infrastructure or a third-party infrastructure is located offsite, but you still have full operational control. Or you may opt for an entirely hosted private cloud environment, which works much the same as a private cloud but can be siloed off from other people’s resources.

There are still other options to consider. For instance, John Sloan, principal consulting analyst at Info-Tech Research Group, says that the hybrid cloud is “a real value area for many organizations.” It’s the next logical step for companies looking to further their cloud computing footprint, because “you can have your cake and eat it, too, in the sense that you can have that private cloud that’s internal and then you can have access to an external cloud provider’s resources,” Sloan says.

A hybrid cloud lets you keep sensitive information in-house, but then opens up the possibility for bursting into the public cloud when you need additional capacity and just have access to additional scalable resources as needed.

The private cloud is a great starting point, but you shouldn’t limit yourself to it. You will open up many more opportunities once you have that solid foundation in place. 

Action Plan

Virtualization. One of the best places to start with a private cloud build is to make sure you have some form of virtualization already in place. It serves as a great foundation for the private cloud, which requires virtualized servers, mass storage solutions, and more.

Applications and data. Consider how your employees will use the private cloud and what types of data and applications you want to move over. Use this as a baseline for capacity and demand planning.

Start small. Move over a few pieces of data and a few low-risk applications at first to test out your private cloud environment. Once you feel comfortable, you can move on to other more large-scale projects.

Think ahead. Be in a position to take advantage of hybrid cloud solutions in the future, so you can have your own internal cloud and a more easily scalable external cloud.

Top Tips

Who benefits. Organizations that will benefit most from the private cloud are those that have a diverse set of consumers, groups that utilize corporate IT assets, or variability in their application workloads, says Ed Anderson, research director at Gartner.

Avoid performance issues. Private clouds help you avoid noisy neighbor syndrome in public clouds, where some tenants may see performance drop off because another tenant is sucking up too many resources, says John Sloan, principal consulting analyst at Info-Tech Research Group.

Use an existing solution. Consider using an existing private cloud solution, rather than reinventing the wheel and trying to create your own solution, says Forrester analyst Lauren E. Nelson.

BUYING TIPS: UPSes



POWER OUTAGES, SPIKES, surges, and other power-related problems are bound to happen. Your best protection is making sure your uninterruptible power supply is up to the task. Here's what to look for.

Start With The Basics

The type of UPS you select is critical to maintaining an effective backup system, says Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net).

The three options are standby, line-interactive, and online. Viars says line-interactive UPSes are a common choice. However, "data center managers will want to lean toward online versions; these systems provide the cleanest power, as well as the most reliable continual power since there is no actual switch-over involved in the event of a power failure."

Learn Total Load & Maximum Runtime

You need to know the minimum time UPS batteries must provide power and the maximum runtime needed, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). If you have diesel generators, typically 15 minutes of battery backup time is standard.

"If all you're looking for is enough power to allow a safe shutdown, simple inexpensive

UPS systems may work out just fine. For mission-critical facilities where uptime is paramount, a parallel system utilizing redundant systems, dual bus, or a combination of both may be required," Koty says.

Viars says improper sizing is a common mistake. Determine the kilowatt load you need to support, Viars says, then calculate 125% of that number and select the next-size-up UPS that will support it.

Know The Features & Options

The UPS features your enterprise needs depend on the protection level required for given applications. To start with, you need to determine an appropriate UPS configuration, Koty says.

"What type of system will work best at your facility: static or rotary?" With a rotary system that has centrifugal ride-through, Koty says, you will not need batteries. But with a small window of ride-through time, the diesel generators must start or your data center will go down.

"If you have dirty power, you'll want a UPS system that can handle more than just a straight power loss," Koty says. Make sure your UPS can handle power anomalies such as spikes, surges, swells, or sags.

You'll also need to decide if you want redundancy and, if so, how you want to get that redundancy, says Rich Feldhaus, product manager at Tripp Lite

(773/869-1234; www.tripplite.com). "By way of UPS +1 power module redundancy or by dual-feed power redundancy supported by two independent UPS systems?"

Look For Savings

Viars says more UPS manufacturers are striving to improve the energy efficiency of their products, so check for energy efficiency and the Energy Star rating. "It's an ongoing race to see who can produce the most efficient system," she says.

Feldhaus says UPSes with an economy mode option can help lower costs—look for an economy mode that can be scheduled.


Plan For The Future

One common mistake is not planning for future electrical needs, Koty says. Don't forget to

account for unexpected additions that inevitably crop up.

"Make sure the system you buy can either handle the needs of the data center as it will be built out, or make sure that it is modular in design so that, as electrical needs increase, additional UPS units can be installed/integrated without disrupting the existing systems." If you're buying a modular system, make sure to size the input feeds to your system to accommodate the maximum upgrade size, he says.

Check For Support & Service

Koty says to compare vendor service and maintenance and check the manufacturer's local reps. "Typically you will want a maintenance contract that will guarantee a 30-minute callback and no longer than four hours to have a person onsite." 

CHECKLIST

Power and load. Determine your uptime goals and the kW load needed. Ensure the UPS you purchase can handle the required loads and that it provides sufficient runtime and capacity.

Available features. Capabilities to look for include UPS configuration, redundancy, and the ability to handle any power anomaly. Don't forget to check the UPS' energy efficiency rating.

Protection. Determine warranty, insurance, and guarantee requirements available from the manufacturer.

Plan for the future. Make sure the UPS is modular and can be expanded as needed to account for both future growth and unexpected additions.

BUYING TIPS:

Equipment Recycling & Disposal Services



WHEN YOU'RE DEALING with old equipment, you typically have two options: reuse it in another capacity, such as repurposing an old server for an application that doesn't demand mission-critical performance, or use a vendor that specializes in refurbishing, recycling, and disposing of old equipment.

A vendor can ensure equipment is handled in an environmentally responsible manner while abiding by privacy and compliancy regulations. Here's what to look for.

Compare Providers

When comparing service providers, examine what the services are offering, says Brett Femrite, director of business development for Rackmount Solutions (866/207-6631; www.rackmountsolutions.net).

"Some of the larger companies charge for asset disposal, while others will pay you for the equipment. Smaller regional companies can often provide more cost-effective solutions because of local transportation, labor, and processing," he says.

Companies that offer to pay you may provide revenue sharing and the ability to purchase other refurbished hardware. "Ask for referrals, performance reports, or projections up front. Looking at past disposal lists will make it easy to forecast what you can expect," Femrite says.

Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com), says you want a reputable company with a good track record. Find out how long the vendor has been in business and ask for (and check) a list of previous clients.

Know Your Equipment & Needs

Be sure you understand your equipment and the capabilities of the recycling company.

"Can your equipment be recycled whole, or must it or parts of it be destroyed? How are you going to handle hard drives or other media devices? Are you going to remove them yourselves and destroy them prior to recycling, or is the service qualified to destroy them for you?," Koty says. Be sure any servers you are disposing have all your data removed, he says, and consider pulling and destroying the data drives prior to recycling.

"If you have specific needs for the way equipment is destroyed, ask for a certificate of destruction as verification of the service provided."

Check Facilities, Processes

Don't just look for the least expensive company, Koty says. "Even if the outside firm produces all the proper paperwork and has a good sales pitch, there could still be liability issues for the data center if the firm doesn't follow proper disposal procedures."

Koty recommends visiting the firm and inspecting its procedures. Check what security and surveillance the vendor uses, how it can assist with ROI for current projects, and what documentation processes it uses.

Find out how equipment is picked up and handled, who pays for shipping, where equipment ends up, when you will get paid, and if the vendor can assist in other ways such as providing new products or offering credit from old equipment. Know if the vendor has downstream vendors and who they are.

Onsite Or Offsite?

With data destruction, you have two choices: onsite or

offsite. With an onsite service, you won't have to deal with chain of custody documentation. If your data center stores sensitive data and wants to physically destroy it, you'll have peace of mind from watching the destruction take place.

If you want absolute destruction that's beyond recovery, offsite data destruction may be ideal as service providers typically have more powerful shredders at their facilities than mobile shredder services can offer, plus a number of offsite data destruction services also double as a reprocessing center that can remarket the parts, so you can get some return value for your used equipment. **P**

CHECKLIST

Do your homework. Compile a list of equipment you no longer need, then determine its resale value, who might purchase the equipment, and how the resale value can help fund purchases.

Check for qualifications. Determine how long the prospective vendor has been in business, what its reputation is in the industry, and what compliancy and certification measures it operates by and has achieved.

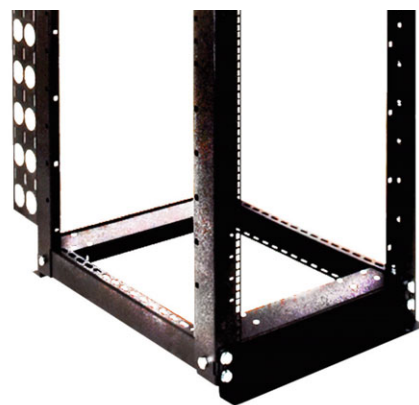
Know the difference between a broker or provider.

Determine if the vendor actually provides recycling and disposal services or is just a broker of such services.

Understand the process. Know how the vendor processes equipment, including who handles equipment, where it goes, how long processing takes, and what documentation you can expect.

BUYING TIPS:

Data Center Racks & Cabinets



RACKS AND CABINETS hold and protect every piece of equipment that runs your data center, so don't rush the decision about which cabinet to purchase. Instead, focus on the most important features and ensure the cabinet will fulfill your needs for years to come.

Know What's On The Market

Start by researching what's on the market. There are full-sized, midsized, and smaller cabinets as well as racks with heights of 30 to 84 inches and widths of 24 to 36 inches.

A common mistake is buying the typical base 42U, 600mm-wide, 1,050mm-deep configuration that is the most popular rack and just assuming it will work for your specific configuration, says Craig Watkins, product manager at Tripp Lite (773/869-1234; www.triplite.com).

"Maybe they require a rack that's taller than typical. Maybe they need a rack that is a wide or deep version. And is a black rack the way to go? When installing equipment, can the rails be adjusted?" A color other than black, Watkins says, can make tasks such as connecting servers and other equipment easier and cut down on mistakes.

Eli E. Hertz, CEO and president of Hergo (888/222-7270; www.hergo.com), says to look for potential add-on items, such as overhead storage compartments, power and cable

management solutions, and back and side panels. Different sized racks and cabinets paired with additional solutions can help you design a product that's perfect for your data center.

Pinpoint Your Needs

"Establish what you need the cabinet to do," says Susan Wynne, senior sourcing specialist for Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). "If the equipment is noisy, you may want a sound reduction cabinet. If the environment is dirty, you may need a filtered cabinet. Even the area of the country is important, and you may need an air-conditioned or NEBS cabinet."

Other considerations include whether you have a sprinkler-based fire suppression system that requires NEMA 12 certified cabinets that keep out moisture, Wynne says. You should also consider built-in security measures, such as locked cages or other alternatives, if there is a lot of traffic in your data center.

Get The Right Fit

In most cases, you've decided which pieces of equipment to buy for your data center before you start shopping for the racks and cabinets to store them in. It's a great opportunity to measure each piece and come up with a mock configuration for how it will fit into the rack or cabinet. "This ensures

the cabinet is tall enough, wide enough, and deep enough to handle the longest piece of equipment to be populated into the cabinet," Wynne says.

But be careful you don't populate the racks or cabinets with more equipment than you can reasonably concentrate in one area, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). A higher density of equipment creates more heat and possible hot spots. "Make sure your cooling equipment can adequately cool the equipment before you put it all in one spot."


The amount of space the rack or cabinet takes up is equally important. "Make sure the outside dimensions of the cabinet will fit in the designated location," Wynne says. Leave adequate space for future

expansion. If you don't, you could get stuck with a cramped and inefficient data center with no room for evolution.

Check For Airflow

If you are utilizing raised floors and CRAC units, having vents or grills to allow airflow through the structure is essential, Koty says. "Look for server cabinets that provide good ventilation. Make sure that the cabinets draw cold air from the front and discharge in the back to enable a hot/cold-aisle configuration."

Research The Vendor

The decision of which vendor to buy from is significant, Hertz says. Companies should be able to "grill the supplier on what they are actually going to be getting." The vendor should know "the product from nuts to bolts." 

CHECKLIST

Cable management. Is cable management built-in, or does the rack or cabinet leave adequate space to neatly route cables?

Mounting. Does the rack/cabinet provide PDU mounting options such as brackets?

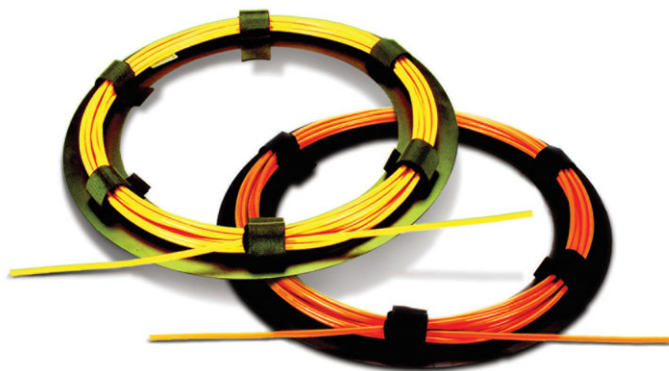
Special requirements. Does the equipment you're mounting require tapped or M6 holes?

Check for fit. Will you need to disassemble the rack/cabinet to get it in the room?

Security. Is the cabinet lockable to prevent potential security issues?

BUYING TIPS:

Cable & Airflow Management



MANAGING CABLES is an afterthought. That's an unfortunate reality among many data centers, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). Among other things, poor cable management leads to performance problems and issues with troubleshooting and airflow.

Know What's Available

Well-designed patch cable managers, which house and cover patch cords between patch panels and devices, are a popular options, says Brett Femrite, sales manager at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). He says they are functional in helping reduce cable sprawl, and they are also bend-radius-compliant and offer cosmetic appeal.

Other cable management options include horizontal and vertical wire managers (which can be mounted on the front or rear of your rack or cabinet), cable ladders, cable trays and conduits, and wire minders (rings) that can be mounted on any rack system.

Vertical and horizontal lacer bars are also very popular, Femrite says. "These bars can be mounted on a rack or within a cabinet and have slots through which Velcro enclosures or cable wraps are routed to hold groups of cable," he says.

In terms of airflow management, blanking panels are one of the least expensive fixes a user can implement, says Craig Watkins, product manager at Tripp Lite (773/869-1234; www.tripplite.com). "A simple blanking panel will do wonders for cooling a specific rack or row."

Get The Right Fit

Not all cable management products or blanking panels will fit in every rack. For example, cable managers sometimes fit in specific mounting holes that could differ from manufacturer to manufacturer, Watkins says.

"Users need to ask, 'Will it fit into my rack?'," he says. "Make sure you get the appropriate managers for what you are trying to accomplish in the rack you are trying to accomplish it in."

Consider Color & Labeling

Koty says color coding can help identify and trace cables and simplify management. With data cables, use color to identify the cable's role/function or connection type. With power cables, use color to identify and organize dual power feeds for redundant power sources. Secure labels so they're accessible but difficult to remove. Also, maintain a spreadsheet that identifies the cables and colors, where

cables come from and go, and configurations.

Plan For Expansion

Laura Viars, senior sourcing specialist at Rackmount Solutions, says to be sure your cable management configuration allows for future equipment additions. Do this by making certain managers (both in-rack cable managers and external trays and ladders or conduits) don't meet or exceed their fill capacities. Most management options are available in multiple sizes, she says,

ensuring a fit with plenty of excess if needed.

Also seek solutions with the flexibility to add new equipment or troubleshoot an existing component. "Lean toward reusable options such as Velcro straps in lieu of cable ties and managers that allow easy access to their contents," she says.

If you expect rapid and near-term growth, keep cables loosely organized during implementation by cutting down on the bundling and by using managers (D-rings vs. managers with covers) offering easier access. **P**

CHECKLIST

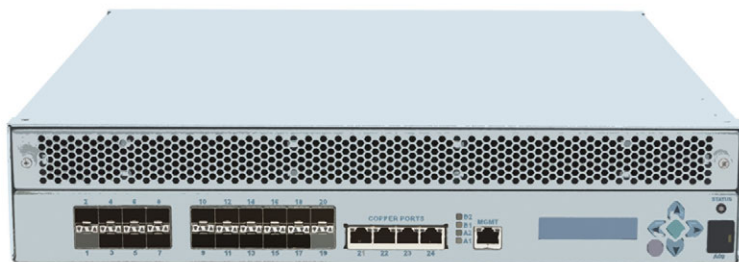
Know what you need. One of the biggest problems with airflow management is cables, says Craig Watkins, product manager at Tripp Lite (773/869-1234; www.tripplite.com). Make sure the cable and airflow management tools you buy route cables off to the sides, away from the air intake of the mounted equipment, he says. Also remember that air will take the path of least resistance. "Block off the open spaces and force the air through the equipment, not around it."

The basics. Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says no matter the size of installation planned, you'll likely need basic management items such as vertical managers to bundle cable along the height of the racks/cabinets; horizontal managers to bring the cabling neatly from the drop to the equipment; and Velcro straps to bundle cables as needed.

Testing. Pre-test all cable before installing, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). Once installed, it's more difficult to test and identify problems.

BUYING TIPS:

Networking Equipment



THE HEALTH of a company's network is crucial to its productivity. As such, the decision about what equipment runs your enterprise network can't be taken lightly.

As you evaluate which equipment you'll buy to run your network and improve metrics overall, here's what to watch for.

Seek Advice

Before buying next-generation network gear, build your knowledge of current standards, protocols, and vendors' proprietary features. Doing so, says Rob Enderle, principal analyst for Enderle Group, can save time in narrowing down vendors and what equipment is available that can meet specific needs.

"Like a fine wine, you don't implement a standard before it's time, but you don't want to be excessively late, either," Enderle says. "Otherwise, you'll likely pay a premium for aging technology. Stay informed."

Look For Cost-Effective Network Upgrades

It's important to look for ways to cost-effectively upgrade networking equipment. Alan Weckel, Dell'Oro Group senior director of data center appliance, enterprise telephony, and Ethernet switch market research, says

that reducing spare capacity is the biggest way to cut costs.

Eric Hanselman, research director, networks at 451 Research, says before upgrading, you need to assess the performance of the various components of the network.

Surveying network performance can pinpoint whether core, edge, or access need attention. Wireless performance can be more complex to assess, Hanselman says. Because the radio frequency performance varies with physical building constraints and the wireless devices involved, you may need expert help. "Simply adding more access points can often make a bad situation worse," he says.

Go To The Core

Core network upgrades can add capacity that elements at the network edge can leverage, Hanselman says. "This is a good investment if there is congestion in the core, and this is often the case," he says. "If access performance is a bottleneck, either for devices or for traffic headed to the Internet or wide area network, a core upgrade won't make a noticeable difference."

One possibility for cutting costs when upgrading core networking gear is acquiring used or refurbished components. Hanselman says such gear can offer reasonable value, "as

long as it's still actively supported by the manufacturer." Support, he says, must include the firmware and OS.

"For some manufacturers, equipment components can be upgraded without replacing a whole chassis," he says. "Control or supervisory module upgrades may be available in both new and refurbished equipment."

Weckel says buying used or refurbished networking equipment can be a good option for smaller enterprises, "as a switch from a Fortune 50 company that is three years old is still probably feature-rich for what an SMB may need."


Bargain For Better Prices

Vendors are often willing to get aggressive with pricing, especially if they know competitors are in the picture. Pin

down your list to two or three vendors that you'll be happy with and then start bargaining.

Where the ideal time to buy is concerned, Enderle says it's helpful to have someone you trust who is active in the standards efforts in on the decision "so they can tell you of the pitfalls and help you with timing," he says. "This ensures you neither buy early nor late."

Take Your Time

Spending the time to implement a network refresh correctly can result in time and money savings later. "Much of the cost connected to any technology change is the result of mistakes that result in the firm buying what they don't yet and may never need and in undoing bad decisions," Enderle says. 

CHECKLIST

Check for features. Is the product designed for the needs of your particular enterprise?

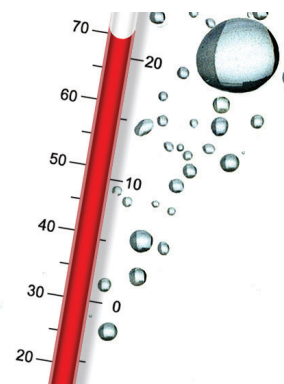
Look for used or refurbished equipment. Purchasing used or refurbished equipment is an option worth considering, particularly for smaller enterprises.

Become more knowledgeable. Make sure you are up to date with current standards and protocols before taking a look at the equipment options available.

Make sure the upgrade is necessary. Do you have a plan for how you will take advantage of this upgrade now or in the near future?

BUYING TIPS:

Environmental Monitoring Equipment



AS A DATA CENTER manager, you need to have a full understanding of not only what's happening with your network and servers, but also the environment around them. Environmental monitoring is key, but every organization has unique infrastructure limitations, climate issues, and monitoring needs, so there's no one-size-fits-all solution. Here's what to look for.

Define Your Needs & Threats

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says you need to know what types of threats might occur. "The most common environmental risk is excessive heat within the cabinets, so you'll definitely want to make sure you are monitoring temperature," she says. Other potential environmental dangers include power surges/loss of power, humidity, smoke, airflow, and room/cabinet entry.

"Know thy facility," says Michael Sigourney, senior product specialist at AVTECH (888/220-6700; www.avtech.com). "The first thing an IT or facilities manager needs to consider and create is an understanding of the basic layout and elements, both structure and equipment, within their facility. Knowing where threats are likely to occur or have occurred in the past is key to planning success."

Don't Neglect Hot Spots

When deploying environmental monitoring controls, consider the room size and amount of equipment to be monitored and plan the number and placement of sensors accordingly.

"If your deployment is small, a few points of measurement may suffice, but if you have a large operation, you may require environmental measurements every few feet," says Brandon Siri, senior marketing representative at Server Technology (800/835-1515; www.servertech.com).

Mo Sheikh, sales and marketing manager at ITWatchDogs (512/257-1462; www.itwatchdogs.com), says administrators often overlook hot spots. This can lead to intermittent or permanent equipment failure.

You need to position sensors throughout a facility, usually the top, middle, and bottom of server racks and around any heavy-duty machinery, he says. Buy sensors specifically made for rack-level temp/humidity monitoring and be sure you can daisy-chain the sensors rack-to-rack for easy installation and ease of use.

Know Your Monitoring & Notification Options

Bob Douglass, vice president of sales and marketing at Sensaphone (877/373-2700; www.sensaphone.com), says an

environmental monitoring system is nothing without notifications. "The primary motivation for adding an environmental monitoring system is to know when you have a problem as soon as possible," he says. Common notification options include email, LEDs, audible alarms, beacons, sirens, Web alerts, SNMP, automated phone calls, and SMS.

Sheikh says environmental monitors should support SNMPv3 to be able to securely monitor and control sensors and settings on any unit from a remote location and receive alerts and log messages that are fully encrypted.


Get All You Need

Be sure you get all the components to complete the system,

Viars says. "Most systems have a main console, and in addition to that, you'll need to purchase various sensors based on what you are looking to monitor specifically." Some sensors might require a power source, so consider that when planning your layout.

Sigourney adds that the best solutions include software. "This prevents wasted time trying to get hardware and software from two vendors working together."

Consider Long-Term Support

Choosing the right solution means little if you don't have long-term support, Sigourney says. "Look beyond the checklist and make sure that you're getting future enhancements, that you have access to support, and that the company stands behind its products." 

CHECKLIST

Know what to monitor. What are your greatest environmental concerns? Water? Temperature? Humidity? Are the systems you'll be monitoring remote or local?

Check for limits. Do you have wired networking or power limitations? Will the environmental monitoring devices connect via network, USB, Wi-Fi, or cellular?

Understand notification options. What kinds of notifications do you need? Common options include email, SMS, and automated phone calls.

Consider your facility. How many and what types of sensors do you need? Where will they be placed?

Network With Your Peers At These IT Training & Association Meetings Across The United States

OCTOBER

AITP Wheeling

Oct. 9
White Palace at Wheeling Park
1801 National Road
Wheeling, W.Va.
www.aitp-wheeling.org

AITP Fall Region 5 Conference

Oct. 10
The Chateau
1601 Jumer Drive; Bloomington, Ill.
www.aitp.org/group/905

AITP Washington, D.C.

Oct. 10
Alfio's La Trattorio Restaurant
4515 Willard Ave.
Chevy Chase, Md.
www.aitpdc.org

AITP Region 5 Leadership Workshop

(AITP members only)
Oct. 11
The Chateau
1601 Jumer Drive; Bloomington, Ill.
www.aitp.org/group/905

AITP Richmond

Oct. 15
Hilton Garden Inn at Innsbrook
4050 Cox Road
Glen Allen, Va.
www.aitprich.org

AITP Southwest Missouri

Oct. 15
High Street Baptist Church
900 N. Eastgate Ave.
Springfield, Mo.
aitpspringfield.org/main.html

Big Data TechCon

Oct. 15-17
Hyatt Regency Burlingame
1333 Bayshore Highway
Burlingame, Calif.
www.bigdatatechcon.com/SanFrancisco2013

AITP Northeastern Wisconsin

Oct. 16
Holiday Inn Appleton
105 S. Nicolet Road
Appleton, Wis.
new.aitp.org/eventsmeeting-info

AITP Twin City

Oct. 17, 7 p.m.
Ozark House Restaurant
704 McGregor St.
Bloomington, Ill.
www.aitp.org/members/group_content_view.asp?group=75779&id=125369

AITP California Southland

Oct. 23
Garden Grove, Calif.
www.aitpcalsouthland.org

ISSA Baltimore

Oct. 23
Concurrent Technologies Corp.
8530 Corridor Road
Savage, Md.
www.issa-balt.org

AITP Region 18 IT CON

Oct. 26
Doubletree Hotel
340 Racetrack Road
Washington, Pa.
www.aitp-region18.org

**AITP Akron
60th Anniversary
Meeting**

Oct. 29, 6 to 9 p.m.
Holiday Inn Akron West
4073 Medina Road
Akron, Ohio
www.akron-aitp.org

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ISSA Inland Empire

Oct. 29, 11:30 a.m. to 1:30 p.m.
Upland, Calif.
ie.issa.org

NOVEMBER

**Cisco CCN Certification
Training Course**

Nov. 4
Institute of Professional Learning
500 W. Cypress Creek Road
Ft. Lauderdale, Fla.
www.iplearning.net

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AITP Richmond

Nov. 12
Hilton Garden Inn at Innsbrook
4050 Cox Road
Glen Allen, Va.
www.aitprich.org

**Android
DevCon Fall**

Nov. 12-15
Boston, Mass.
www.andevcon.com

• • • • •
**AITP
Wheeling**

Nov. 13
White Palace
at Wheeling Park
1801 National Road
Wheeling, W.Va.
www.aitp-wheeling.org

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**AITP
Washington, D.C.**

Nov. 14
Alfio's La Trattorio Restaurant
4515 Willard Ave.
Chevy Chase, Md.
www.aitpdc.org

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**AITP
Southwest Missouri**

Nov. 19
High Street Baptist Church
900 N. Eastgate Ave.
Springfield, Mo.
aitpspringfield.org/main.html

**AFCOM
Greater Tampa Bay
Chapter**

Nov. 20
12:30 to 4 p.m.
www.tampabayafcom.com

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**AITP
Northeastern Wisconsin**

Nov. 20
Holiday Inn Appleton
105 S. Nicolet Road
Appleton, Wis.
new.aitp.org/eventsmeeting-info

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**AITP
Twin City**

Nov. 21, 7 p.m.
Ozark House Restaurant
704 McGregor St.
Bloomington, Ill.
www.aitp.org/members/group_content_view.asp?group=75779&id=125369

• • • • •
**ISSA
Inland Empire**

Nov. 22, 6 to 9 p.m.
Upland, Calif.
ie.issa.org

**Do you have an event you'd like to see listed?
Send an email to feedback@processor.com.**

PROCESSOR[®]

Solutions Directory

Here are brief snapshots of several companies offering products designed for the data center and IT industry. Listings are sorted by category, making it easy for you to find and compare companies offering the products and services you need.

You can find more detailed information on these companies and the products they offer inside this issue.

**To list your company and products,
call (800) 247-4880.**

PHYSICAL INFRASTRUCTURE



ITWatchDogs

ITWatchDogs manufactures environmental monitors that help prevent downtime from climate- and power-related issues. Its Web-enabled monitors let users keep an eye on remote conditions from a secure Web interface and receive SNMP, email, SMS, and voice call alerts when specified alarm thresholds are exceeded for external factors, including temperature, humidity, airflow, power failure, smoke, water detection, and more.

Products Sold:

- Climate monitors
- Power monitors
- Digital and analog sensors
- IP surveillance cameras

(512) 257-1462 | sales@itwatchdogs.com | www.itwatchdogs.com

PHYSICAL INFRASTRUCTURE



PDUsDirect.com is a Master Distributor of select Server Technology PDUs for server and networked environments. PDUs Direct's basic, metered, and switched Rack PDUs provide local and remote power management, power monitoring, and environmental monitoring. We pride ourselves in offering industrial-grade quality products at the lowest prices, with the fastest shipping (most orders shipped within 24 hours) and simplest purchase process. We are the Power Behind the Business.

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A complete line of metered and basic PDUs, and 20A switched PDUs.

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PHYSICAL INFRASTRUCTURE



Founded in 1985, Raritan has become a leading provider of power and energy management, DCIM and KVM solutions. Our products are in use at more than 50,000 locations worldwide, including eBay, Cisco, Intel, NASA, and the United States Post Office, giving IT departments the tools they need to increase power management efficiency, better manage data center changes, improve data center productivity and enhance branch office operations.

Products Sold:

- Intelligent Rack Power Distribution Units
- Energy Management Software
- Data Center Infrastructure Management
- KVM and Remote Access Management

(732) 764-8886 | www.raritan.com

PHYSICAL INFRASTRUCTURE



C.E. Communication Services (CE COMM) distributes, markets, designs, and manufactures Data Center products, specializing in Network Infrastructure, Cable and Wire Management, and Fiber and Copper Cabling.

Products Sold:

- Patented Cable Management Systems for CISCO Catalyst and all 1U Switches
- Standard & Custom Data Center Cable Assemblies: Copper CAT5E, CAT6 & 6A
- High Density Optical Fiber Assemblies
- Fiber Connectivity, Fiber Test - Inspection and Media Conversion Equipment

(866) 966-1555 | www.ccommunication.com

PHYSICAL INFRASTRUCTURE



BayTech was founded in 1976 and, since the 1990s, has developed unique products for remote power management. The company uses printed circuit board instead of wires for a better, more resilient connection between the data center equipment and the receptacle. BayTech provides an extensive Web site with brochure downloads, warranty information, and reseller support and also offers evaluation units for data centers.

Products Sold:

- Power control, distribution, management, and metering
- Power transfer switches
- Console management and remote site management

(800) 523-2702 | www.baytech.net

PHYSICAL INFRASTRUCTURE



RackSolutions has been serving the data center market for more than 10 years. All of our products are designed, engineered, built, and shipped under our own roof. We have product solutions available for every major OEM, but if one of our existing products doesn't fit your needs, our top-notch mechanical and electrical engineers can create the item you need from scratch, solving even the toughest installation design challenges. Best of all, we typically don't charge up-front fees for design services.

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- Cabinets and Shelves
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PHYSICAL INFRASTRUCTURE



Tripp Lite is a leading manufacturer of products that power, connect and protect computers and other electronics. Founded in 1922, it is best known for its Uninterruptible Power Supply (UPS) Systems and Isobar® Surge Suppressors (with over 18 million sold).

Products Sold:

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- UPS Batteries
- PDUs
- Cables
- Surge Protectors
- KVM Switches
- Power Inverters
- Racks & Enclosures

(773) 869-1234 | www.tripplite.com

PHYSICAL INFRASTRUCTURE



Rackmount Solutions' mission is to listen to the IT engineer's specific needs and deliver superb-quality, high-performance products through continuous product innovation and operational excellence. We pride ourselves in providing quality customer service, products that fit your IT requirements, and solid value for your money.

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- Shockmount shipping cases
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PHYSICAL INFRASTRUCTURE



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PHYSICAL INFRASTRUCTURE



Server Technology is committed to the PDU market with the largest group of engineers dedicated to power distribution and other solutions within the equipment cabinet. Advancements in device power monitoring help data centers monitor and improve their efficiency, and continuous research and development is fueled by companies that look to Server Technology for their custom cabinet power solutions.

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PHYSICAL INFRASTRUCTURE

PDU Cables™ Innovator in data center efficiency

PDU Cables is the leading supplier of power distribution cables assemblies to data centers in North America. PDU Cables has been serving this industry since 1981 and is the first independent cable assembly company to introduce colored conduit into the power distribution cable market, the first to get UL 478 listing, and the first to introduce the Power Cable and Equipment Configurator software tool. The company is centrally located in Minneapolis, Minn., allowing it to offer 24-hour turnaround and shipping time of just one or two days to almost any United States destination.

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A range of power cables, cable seals, and power cord assemblies.

(866) 631-4238 | www.pducables.com

PHYSICAL INFRASTRUCTURE



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- Connectors and cables (cord sets, ePDU cables)
- Cooling and Racks (airflow management, portable cooling)

(800) 672-7244 | www.hmcragg.com

PHYSICAL INFRASTRUCTURE



AVTECH Software, founded in 1988, is focused on making the monitoring and management of systems, servers, networks, and data center environments easier. AVTECH provides powerful, easy-to-use software and hardware that saves organizations time and money while improving operational efficiency and preparedness. AVTECH products use advanced alerting technologies to communicate critical status information and can perform automatic corrective actions.

Products Sold:

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PHYSICAL INFRASTRUCTURE



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Products Sold:

Remote monitoring solutions that provide email and voice alarm notification for problems related to temperature, humidity, water detection, power failure, and more.

(877) 373-2700 | www.sensaphone.com

PHYSICAL INFRASTRUCTURE



Based in New York City, Hergo Ergonomic Support Systems is an independent designer and manufacturer of enclosure cabinet solutions, technical computer furniture, and modular racking systems. The company's products are designed to promote organization in the workspace and to increase the productivity of computers, peripherals, and communications equipment. Hergo is known for its high-quality products and superior customer service.

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PHYSICAL INFRASTRUCTURE



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NETWORKING & VPN



SECURE COMMUNICATIONS

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SERVERS



Chenbro is a leader in enclosure solutions, selling its products primarily to system integrators and OEM and channel partners. The company's extensive research and development efforts help it to keep its competitive edge and maintain market leadership, with special focus on thermal, EMI, and acoustic solutions. Taiwan-based Chenbro has offices in the United States, UK, The Netherlands, and China.

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SERVERS



Intel Intelligent Systems Alliance Premier member American Portwell Technology is a wholly owned subsidiary of industrial computer innovator Portwell of Taiwan. It's known for its custom solutions as well as for its rack-mount and embedded computers used in industrial, medical, retail, financial, semiconductor equipment, mission-critical, and network security environments.

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SERVERS



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SERVERS



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In 1987, Pegasus Computer Marketing started providing mainframe products to the end-user market. What began as a sales-only organization soon adapted to offer in-house repair and refurbishment. During the past 10 years, Pegasus has focused primarily on the point-of-sale and barcode industries, buying, selling, and providing service contracts for anywhere from a few scanners to hundreds.

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